# Self Assessment Report



# Beaconhouse National University

## School of Computer & Information Technology
(B.Sc. (Hons) Software Engineering)

**Prepared by: Program Team of SCIT**
**Prepared by: Quality Assurance Department**

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# Executive Summary

This report is being almost at the end of the assessment of School of Computer and Information Technology (SCIT) of Beaconhouse National University (BNU), as per requirement of Higher Education Commission (HEC). Quality Assurance Department (QA) was formed in BNU in September 2005. Program Team Members notified by University worked with General Manager Quality Assurance to pursue the application of Self Assessment Manual in their respective department.

In School of Computer and Information Technology (SCIT), B.Sc. in Software Engineering program was selected for the self assessment, evaluation and improvements. A commitment of respected Vice Chancellor to support Quality Assurance Department made the difference and resultantly, a cycle of assessment is about to complete.

# Objectives

Following are the two main objectives of the self assessment report:

1. To implement Self Assessment Manual in selected program with a view to improve quality in higher education.
2. To identify the areas requiring improvements in order to achieve objectives through desired outcomes.

# Execution

A soft and hard copy of self assessment manual was given to Dean and faculty. Quality Awareness presentation of Self Assessment Report (SAR) was arranged for the Dean and Program Team Members (PT) of the selected program. Hard copies of HEC issued 10 proformas with manual with 8 criterion and 31 standards were provided to PT members to evaluate their program against defined standards. The PT members with an intimate support and follow up of QA, completed the SAR and forwarded to QA.

After reviewing SAR, QA arranged visit of Assessment Team to the selected program on November 25, 2011. GM (QA) accompanied the AT and participated in discussions with Dean and PT members and available faculty members. Date for exit meeting was fixed as December 15, 2011.

The implementation plan basing in the discussions in exit meeting have been made by In-charge Programs. They prepared it under following headings:

a. Assessment Team finding
b. Corrective Actions required
c. Resources Needed

The implementation plan indicates the resources to improve the infrastructure, environment in the classes and Laboratory manuals. The recommended target dates to complete the tasks observed by Assessment Team, presented in exit meeting on December 29, 2011 and proved by Vice Chancellor have been indicated in the implementation plan.

At the completion of Self Assessment cycle, QA submitted the hard and soft copy of SAR to HEC on December 29, 2011.

General Manger (QA)

# Introduction

School of Computer and Information Technology, Beaconhouse National University is conscious of the fast changing market requirements, which emanate from new systems and technologies. In particular, the Internet and mobile technologies have completely changed the working of the business and commercial world.

The School introduced new programs and updated exiting ones in response to these changing needs.

The teaching – learning model followed by School of Computer& Information Technology greatly emphasizes practical work to enforce understanding of theoretical concepts.

| **1.0**   Criterion 1: Program Mission, Objectives and Outcomes |
|---|

## Institution Mission Statement

"A truly national higher-education institution, emerging as a world-class Liberal Arts university with a merit-driven, need-based recruitment and admission policy at all levels; offering modern curricula in a range of conventional and new disciplines; while preserving the history and culture of Pakistani society; enriching the overall intellectual growth of a student through interaction and professional excellence."

| **Standard 1-1**The program must have documented measurable objectives that support institution mission statements. |
|---|

## Department Vision Statement (School of Computer & IT)

To be recognized as the leading Institution in business computing and software engineering education and research in Pakistan.

## Department Mission Statement (School of Computer & IT)

Our mission is to build a successful career for our students. We will provide them with a high quality, enjoyable learning experience and transform them into managers who are technically superb, socially responsible and professionally accomplished

We will achieve our mission by offering market relevant academic programs in IT, Business and Management in a progressive and friendly learning environment. We will retain highly qualified and dedicated faculty, provide up-to-date resources and pursue policies which are based on performance and merit.

## Program Mission Statement (B.Sc (Hons) in Software Engineering)

The mission of B.Sc. (Hons) in Software Engineering program is to prepare graduates for careers in the Information and Communication Technologies (ICT) sector and post-graduate study and research in ICT and related disciplines.

## Program Educational Objectives

The B.Sc. (Hons) in Software Engineering is designed to achieve following objectives:

1.  To prepare students for software engineering positions in the Information and Communication Technology (ICT) sector of the industry.

2.  To prepare students for higher education in software engineering and relevant disciplines.

3.  To impart technical skills in the art and science of software development.

4.  To prepare students for research and development (R&D) in software engineering and related areas.

5.  To inculcate professional and ethical values in the students.

6.  To develop good interpersonal and communication skills in the students, especially with relevance to their program of studies.

The School of IT has built up its academic environment keeping in view the above program objectives. The selection of faculty, design of curriculum and syllabus, instructional procedures and practice-oriented teaching help to enforce the above program objectives.

The School of IT is supported in its efforts by the Quality Assurance Department of Beaconhouse National University.

## Strategic Plan

One of the goals of the School of IT is to formulate a quality assured curriculum in which various quality parameters are verifiable and bench marked.

To this end, the School of IT follows the systems and procedures prescribed by the HEC. Further, the School of IT has updated its curriculum in line with the recommendations of NCEAC, the accreditation authority set up by the HEC.

## Program Objective's Assessment

The following table shows how each of the above program objectives is measured and the actions taken as a result of these measurements.

The three tools for assessments of program objectives are:

1.  Employer Survey

2.  Alumni Survey

3. Graduating Students Survey

| Objectives | How Measured | When Measured | Improvement Identified | Improvement Made |
|---|---|---|---|---|
| 1 | Graduating Students Survey | Conclusion of four year program | On basis of final project performance | Converted some teaching classes into Lab |
| 2 | Alumni Survey | Within one year of graduation | Nil | Nil |
| 3 | Employer Survey | Within one year of graduation | Better technical writing skills required | Close supervision of final project documents |
| 4 | Graduating Students Survey | Conclusion of four year program | Better analytical and research skills | Monitoring of final year projects with reference to the curriculum |
| 5 | a. Alumni Survey<br>b. Graduating Students Survey | Within one year of graduation | More adherence to professional values | Case based curriculum of professional elective course |
| 6 | c. Alumni Survey<br>d. Graduating Students Survey | Within one year of graduation | Better interpersonal skills required | Encourage students to work in teams |

**Table 1.1: Program Objectives Assessment**

**Standard 1-2: The program must have documented outcomes for graduating students. It must be demonstrated that the outcomes support the program objectives and that graduating students are capable of performing these outcomes.**

## Program Outcomes

B.Sc. (Hons) in Software Engineering has the following program outcomes by the end of the program the students should be able to

1. Comprehend a problem and then propose a computer based solution for it.

2. Setup a software development environment and work in it.

3.      Code, debug and test the software.

4.       Analyze a problem and then represent the analysis in a prescribed document format.

5.      Implement the technical, human and ethical aspects of the software solutions proposed.

6.      Identify errors in the software development and then suggest measures to rectify these errors.

7.      Communicate the issues and problems related to software development in a professional and readily understandable format.

8.      Propose and implement end-to-end solutions.

9.      Come up with software solutions which are relevant to local needs and conditions.

10.     Able to study retrieve relevant information from software literature and research engineering publications.

| Program Objectives | Program Outcomes | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 1 | x | x | x | X | x | X | x | X | x | |
| 2 | | | x | | | | | X | | x |
| 3 | | | x | | x | | | X | | |
| 4 | | | | | | | | X | | x |
| 5 | | | | | x | | x | | | |
| 6 | | | | X | x | | x | | | |

**Table 1.2: Outcomes versus objectives**

The program assessment has been done by launching HEC Proforma number 1 and 10. The students of the program evaluated the courses and teachers of the software engineers program.

**Course-wise**
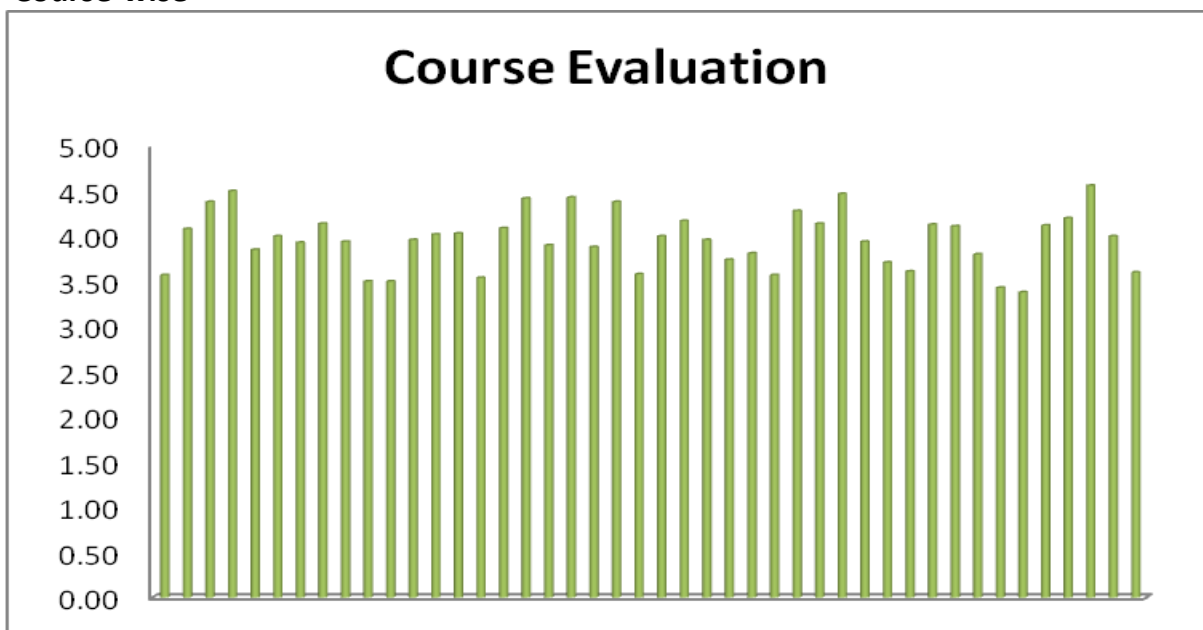


**Table 1.3: Course Evaluation**

| Sr.No. | Course Code | Course Title | Course Cr.Hrs. | Evaluation |
|--------|-------------|--------------|----------------|------------|
| 1 | CSC-306 | Computer Graphics | 3 | 3.57 |
| 2 | MTH-202 | Linear Algebra and Differential Equations | 3 | 4.08 |
| 3 | MGT-401 | Business Policy | 4 | 4.38 |
| 4 | FIN-404 | Topics in Finance | 4 | 4.50 |
| 5 | CSC-307 | Artificial Intelligence | 3 | 3.85 |
| 6 | CSC-204 | Data Structures | 4 | 4.00 |
| 7 | BUS-303 | Business Law | 3 | 3.93 |
| 8 | CSC-104 | Digital Logic Design | 4 | 4.14 |
| 9 | CSC-108 | Intro to Programming (MBC) | 4 | 3.94 |
| 10 | CSC-317 | Software Requirement Engineering | 4 | 3.50 |
| 11 | CSC-411 | Software Quality Engineering | 3 | 3.50 |

| 12 | HUM-202 | Pakistan Studies | 3 | 3.96 |
|----|---------|------------------|---|------|
| 13 | MGT-305 | Operations Management | 3 | 4.02 |
| 14 | CSC-105 | Discrete Structures | 3 | 4.03 |
| 15 | CSC-108 | Intro to Programming (FBC) | 4 | 3.54 |
| 16 | CSC-211 | Database Management Systems (SE) | 4 | 4.09 |
| 17 | BUS-301 | Marketing and Business Development | 4 | 4.42 |

| 18 | MTH-301 | Statistical Inference | 3 | 3.90 |
|---|---|---|---|---|
| 19 | MGT-503 | Entrepreneurship | 3 | 4.43 |
| 20 | MTH-104 | Business Statistics | 3 | 3.88 |
| 21 | CSC-210 | Data Communication and Networks | 3 | 4.38 |
| 22 | CSC-406 | Internet Programming | 4 | 3.58 |
| 23 | MGT-202 | Total Quality Management | 3 | 4.00 |
| 24 | HUM-402 | Professional Ethics | 3 | 4.17 |
| 25 | FIN-102 | Accounting I | 3 | 3.96 |
| 26 | MTH-103 | Calculus & Analytical Geometry-II | 3 | 3.74 |
| 27 | FIN-201 | Accounting II | 3 | 3.81 |
| 28 | BUS-101 | Micro Economics (FBC) | 3 | 3.57 |
| 29 | BUS-101 | Micro Economics (MBC) | 3 | 4.28 |
| 30 | CSC-108 | Intro to Programming (SE) | 4 | 4.14 |
| 31 | CSC-211 | Database Management Systems (MBC+FBC) | 4 | 4.47 |
| 32 | FIN-302 | Information Systems Auditing | 4 | 3.94 |
| 33 | FIN-202 | Financial Management | 4 | 3.71 |
| 34 | MGT-301 | Management of IT | 4 | 3.61 |
| 35 | MGT-203 | Organizational Behaviour | 3 | 4.13 |
| 36 | BUS-202 | Macro Economics | 3 | 4.11 |
| 37 | MTH-101 | Calculus & Analytical Geometry-II | 3 | 3.80 |
| 38 | MTH-102 | Business Maths | 3 | 3.43 |
| 39 | CSC-107 | Fundamentals of Computers | 4 | 3.38 |
| 40 | SE 101-A | Communication Skills I | 3 | 4.12 |
| 41 | MTH-103 | Calculus & Analytical Geometry-I | 3 | 4.20 |
| 42 | MTH-104 | Business Statistics | 3 | 4.56 |
| 43 | HUM-201 | Islamic Studies | 3 | 4.00 |
| 44 | CSC-108 | Intro. to Programming | 4 | 3.60 |

**Table 1.4: Course Table**

**Teacher-wise**



# Faculty Evaluation
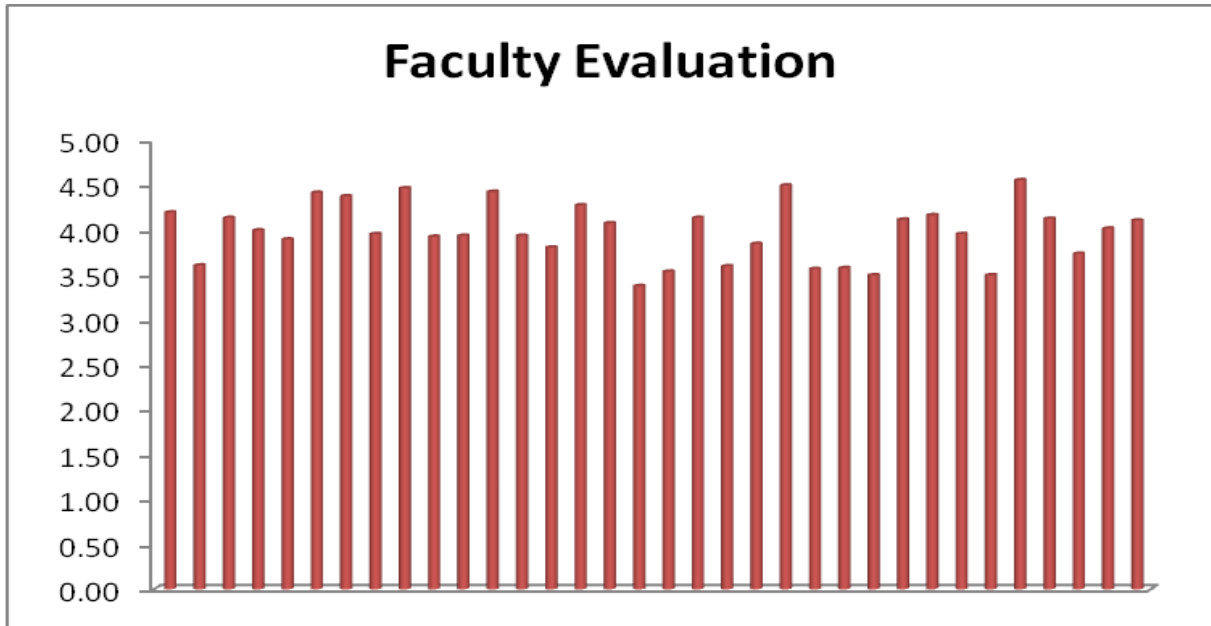
**Table 1.5: Faculty Evaluation**

| Sr.No. | Name of Faculty | Evaluation |
|--------|-----------------|------------|
| 1 | Dr. Ahmad Mahmood Qureshi | 4.20 |
| 2 | Dr. Khaver Zia | 3.61 |
| 3 | Dr. M. Kamran | 4.14 |
| 4 | Mr. Aadil Zia Khan | 4.00 |
| 5 | Mr. Abdul Qayyum | 3.90 |
| 6 | Mr. Attique-ur-Rehman | 4.42 |
| 7 | Mr. Farhan Mushtaq | 4.38 |
| 8 | Mr. Hafiz Imtiaz | 3.96 |
| 9 | Mr. Javed Siddique | 4.47 |
| 10 | Mr. Khalid Aftab | 3.93 |
| 11 | Mr. M. Raheem Sheikh | 3.94 |
| 12 | Mr. Maaz Zahid | 4.43 |
| 13 | Mr. Malik Tahir Hassan | 3.94 |
| 14 | Mr. Rashid Minhas | 3.81 |
| 15 | Mr. S.A.I Bokhari | 4.28 |
| 16 | Mr. Shariq Iqbal | 4.08 |
| 17 | Mr. Sohaib ur Rehman | 3.38 |
| 18 | Mr. Syed Ali Haider | 3.54 |
| 19 | Mr. Touqeer Ahmed | 4.14 |
| 20 | Mr. Umair Babar | 3.60 |
| 21 | Mr. Umar Suleman | 3.85 |
| 22 | Mr. Yasir Javed | 4.50 |

| 23 | Ms. Aisha Mehmood | 3.57 |
|----|-------------------|------|
| 24 | Ms. Ambreen Akhter | 3.58 |
| 25 | Ms. Ammara Laeeq | 3.50 |
| 26 | Ms. Amna Shafqat | 4.12 |
| 27 | Ms. Anam Fatima | 4.17 |
| 28 | Ms. Bushra Jabeen | 3.96 |
| 29 | Ms. Kiran Khurshid | 3.50 |
| 30 | Ms. Lubna Janisar | 4.56 |
| 31 | Ms. Sadaf Ashraf | 4.13 |
| 32 | Ms. Samra Abbas | 3.74 |
| 33 | Ms. Shazia Rizwan | 4.02 |
| 34 | Prof. Azmat | 4.11 |

**Table 1.6: Faculty**

**Standard 1-4: The department must assess its overall performance periodically using quantifiable measures.**

## Status Report of Students (SCIT)

| Year | Program | Applied | Admitted | Left | Terminated | Graduated | Studying |
|------|---------|---------|----------|------|------------|-----------|----------|
| **2004** | MMS | 20 | 15 | 9 | - | 6 | 0 |
| **Sub-Total** | | **20** | **15** | **9** | **0** | **6** | **0** |
| **2005** | MMS | 10 | 3 | 0 | - | 3 | 0 |
| | TCS | 20 | 14 | 8 | - | 6 | 0 |
| **Sub-Total** | | **30** | **17** | **8** | **0** | **9** | **0** |
| **2006** | MMS | 16 | 4 | 1 | - | 3 | 0 |
| | TCS | 25 | 9 | 8 | - | 1 | 0 |
| | MBC | 81 | 33 | 18 | - | 15 | 0 |
| **Sub-Total** | | **122** | **46** | **27** | **0** | **19** | **0** |
| **2007** | MBC | 98 | 29 | 17 | - | - | 12 |
| | FBC | 63 | 19 | 16 | - | - | 3 |
| | SE | 41 | 12 | 8 | - | - | 4 |
| **Sub-Total** | | **202** | **60** | **41** | **0** | **0** | **19** |
| **2008** | MBC | 111 | 40 | 13 | 3 | - | 24 |
| | FBC | 69 | 26 | 6 | 2 | - | 18 |
| | SE | 38 | 18 | 4 | 2 | - | 12 |
| **Sub-Total** | | **218** | **84** | **23** | **7** | **0** | **54** |
| **2009** | MBC | 103 | 28 | 6 | 8 | - | 14 |
| | FBC | 68 | 25 | 8 | 7 | - | 10 |
| | SE | 56 | 18 | 4 | 0 | - | 14 |
| **Sub-Total** | | **227** | **71** | **18** | **15** | **0** | **38** |
| **2010** | MBC | 101 | 40 | 7 | 4 | - | 29 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | FBC | 72 | 27 | 3 | 4 | - | 19 |
| | SE | 88 | 34 | 5 | 2 | - | 28 |
| **Sub-Total** | | **261** | **101** | **15** | **10** | **0** | **76** |
| **2010 Evening** | MBC | 26 | 11 | 8 | 1 | - | 2 |
| | SE | 15 | 6 | 2 | - | - | 4 |
| **Sub-Total** | | **41** | **17** | **10** | **1** | **0** | **6** |
| **2011** | MBC | 107 | 24 | 4 | - | - | 20 |
| | FBC | 40 | 9 | - | - | - | 9 |
| | SE | 122 | 30 | - | - | - | 30 |
| **Sub-Total** | | **269** | **63** | **4** | **0** | **0** | **59** |
| **2011 Evening** | MBC | 18 | 13 | - | - | - | 13 |
| | SE | 31 | 20 | - | 1 | - | 19 |
| **Sub-Total** | | **49** | **33** | **0** | **1** | **0** | **32** |
| **Grand Total** | | **1439** | **507** | **155** | **34** | **34** | **284** |

**Table 1.7: Status Report of Students**

| CRITERION 2: CURRICULUM DESIGN AND ORGANIZATION |
|---|

| **Standard 2-1: The curriculum must be consistent and supports the program's documented objectives.** |
|---|

**Title of Degree Program**

B.Sc. (Hons) in Software Engineering

**Definition of credit hour:**

One credit hour is 1 hour of theory lecture or 3 hours of laboratory work in a week.

**Degree plan**

Following is the list of all courses offered by the School of IT. Courses which are part of the

B.Sc. (Hons) in Software Engineering are indicated with (*).

The matrix of the B.Sc. (Hons) in Software Engineering is given in which pre-requisite of each

course is also indicated.

| BASIC STREAM | S. No. | COURSE CODE | COURSE TITLE | CREDIT HOURS |
|---|---|---|---|---|
| **Business (BUS)** | 1 | BUS - 101 | Micro Economics | 3 |
| | 2 | BUS - 201 | Businesses & Organizations | 3 |
| | 3 | BUS - 202 | Macro Economics | 3 |
| | 4 | BUS - 301 | Marketing and Business Development | 4 |
| | 5 | BUS - 302 | Management of Internet Business | 4 |
| | 6 | BUS - 303 | Business Law | 3 |
| | 7 | BUS - 304 | Principles of Marketing | 3 |
| | 8 | BUS - 305 | Internship (Summer) | 2 |
| | 9 | BUS - 401 | Business Engineering | 3 |
| | 10 | BUS - 4xx | Elective (Business) | 3 |
| **Computers (CSC)** | 11 | CSC - 101 | Basic Electrical Engineering | 4 |
| | 12 | CSC - 102 | Intro to Computing | 4 |
| | 13 | CSC - 103 | Electrical Circuits | 4 |
| | 14 | CSC - 104 | Digital Logic Design (*) | 4 |
| | 15 | CSC - 105 | Discrete Structures (*) | 3 |
| | 16 | CSC - 106 | Programming Techniques | 4 |
| | 17 | CSC - 107 | Fundamentals of Computers (*) | 4 |
| | 18 | CSC - 108 | Intro. to Programming (*) | 4 |
| | 19 | CSC - 109 | Creating Digital Content (*) | 4 |
| | 20 | CSC - 201 | Electronic Devices and Circuits | 4 |
| | 21 | CSC - 202 | Intro. to Signal Processing | 4 |
| | 22 | CSC - 203 | Computer Networks | 3 |
| | 23 | CSC - 204 | Data Structures (*) | 4 |
| | 24 | CSC - 205 | Computer Org. & Assembly (*) | 4 |
| | 25 | CSC - 206 | Event-Driven Programming (*) | 4 |
| | 26 | CSC - 207 | Analog Communication | 3 |
| | 27 | CSC - 208 | Digital Electronics | 4 |
| | 28 | CSC - 209 | System Administration | 4 |
| | 29 | CSC - 210 | Data Communication and Networks (*) | 3 |
| | 30 | CSC - 211 | Database Management Systems (*) | 4 |
| | 31 | CSC - 213 | Object Oriented Programming (*) | 4 |
| | 32 | CSC - 301 | Digital Communication | 4 |
| | 33 | CSC - 302 | Computer Architecture (*) | 3 |

| | S. No. | COURSE CODE | COURSE TITLE | CREDIT HOURS |
|---|---|---|---|---|
| | 34 | CSC - 303 | Software Engineering (*) | 3 |
| | 35 | CSC - 304 | Computer Communication & Networks (*) | 4 |
| | 36 | CSC - 305 | Mobile Communication Systems | 4 |
| | 37 | CSC - 306 | Computer Graphics (*) | 4 |
| | 38 | CSC - 307 | Artificial Intelligence (*) | 3 |
| | 39 | CSC - 308 | Control Systems | 3 |
| | 40 | CSC - 310 | ERP Systems | 3 |
| | 41 | CSC - 311 | Advanced Internet Programming | 4 |
| **BASIC STREAM** | S. No. | COURSE CODE | COURSE TITLE | CREDIT HOURS |
| | 42 | CSC - 313 | Object Oriented Analysis and Design (*) | 3 |
| | 43 | CSC - 314 | Study of Algorithms (*) | 3 |
| | 44 | CSC - 315 | Lab Projects Course (*) | 3 |
| | 45 | CSC - 316 | Software Construction (*) | 4 |
| | 46 | CSC - 317 | Software Requirements Engineering (*) | 4 |
| | 47 | CSC - 401 | Electromagnetic Communication | 3 |
| | 48 | CSC - 402 | Theory Of Automata | 3 |
| | 49 | CSC - 403 | Operating Systems (*) | 3 |
| | 50 | CSC - 404 | Microprocessor Engineering | 4 |
| | 51 | CSC - 405 | Mobile Software Applications | 4 |
| | 52 | CSC - 406 | Internet Programming | 4 |
| | 53 | CSC - 407 | Modulation & Channel Coding | 3 |
| | 54 | CSC - 408 | Compiler Theory | 3 |
| | 55 | CSC - 410 | Data Warehousing | 4 |
| | 56 | CSC - 411 | Software Quality Engineering (*) | 3 |
| | 57 | CSC - 412 | Software Project Management (*) | 3 |
| | 58 | CSC - 413 | Formal Methods in Software Engineering (*) | 3 |
| | 59 | CSC - 414 | Software Design and Architecture (*) | 3 |
| | 60 | CSC - 4xx | Elective (Development) | 3 |
| | 61 | CIS - 101 | IS Applications | 3 |
| | 62 | CIS - 201 | IS Application Development | 3 |
| | 63 | CIS - 202 | Internet Application Development I | 4 |
| | 64 | CIS - 203 | IS Analysis and Design | 3 |

| BASIC STREAM | S. No. | COURSE CODE | COURSE TITLE | CREDIT HOURS |
|---|---|---|---|---|
| **Information Systems (CIS)** | 65 | CIS - 204 | IS Hardware and System Software | 3 |
| | 66 | CIS - 301 | Information Management | 3 |
| | 67 | CIS - 302 | Internet Application Development II | 4 |
| | 68 | CIS - 303 | Business Process Management | 3 |
| | 69 | CIS - 304 | Network Security | 3 |
| | 70 | CIS - 305 | Human Computer Interaction | 3 |
| | 71 | CIS - 401 | Disaster Recovery Planning | 3 |
| | 72 | CIS - 402 | IS Strategy and Management | 3 |
| **Finance (FIN)** | 73 | FIN - 101 | Intro to Finance | 3 |
| | 74 | FIN - 102 | Accounting I (*) | 3 |
| | 75 | FIN - 201 | Accounting II | 3 |
| | 76 | FIN - 202 | Financial Management | 4 |
| | 77 | FIN - 203 | Management Accounting | 3 |
| | 78 | FIN - 301 | Corporate Finance | 3 |
| | 79 | FIN - 302 | Information Systems Auditing | 4 |
| | 80 | FIN - 401 | Strategic Financial Management | 3 |
| | 81 | FIN - 402 | Financial Markets and Institutions | 3 |
| | 82 | FIN - 403 | Financial Management for MBC | 3 |
| | 83 | FIN - 404 | Topics in Finance | 4 |
| | 84 | FIN – 4xx | Elective (Finance) | 3 |
| **BASIC STREAM** | **S. No.** | **COURSE CODE** | **COURSE TITLE** | **CREDIT HOURS** |
| **Humanities (HUM)** | 85 | HUM - xxx | Humanities (Elective) | 3 |
| | 86 | HUM - 3xx | Foreign Language (*) | 3 |
| | 87 | HUM - 201 | Islamic Studies (*) | 3 |
| | 88 | HUM - 202 | Pakistan Studies (*) | 3 |
| | 89 | HUM - 301 | Technical & Professional Communication (*) | 3 |
| | 90 | HUM - 302 | Psychology | 3 |
| | 91 | HUM - 401 | Research & Professional Issues  (*) | 3 |
| | 92 | HUM - 402 | Professional Ethics (*) | 3 |
| | 93 | MC B 118 | Media & Ethics | 3 |
| | 94 | SE 101-A | Communication Skills I (*) | 3 |
| | 95 | SE 101-B | Communication Skills II (*) | 3 |
| | 96 | MGT - 101 | Principles of Management (*) | 3 |
| | 97 | MGT - 201 | Management Information Systems | 3 |
| | 98 | MGT - 202 | Total Quality Management | 3 |

| | | | | |
|---|---|---|---|---|
| **Management (MGT)** | 99 | MGT - 203 | Organizational Behavior | 3 |
| | 100 | MGT - 301 | Project Management | 4 |
| | 101 | MGT - 302 | Human Resource Management | 3 |
| | 102 | MGT - 303 | Management of IT | 4 |
| | 103 | MGT - 304 | Entrepreneurship | 3 |
| | 104 | MGT - 305 | Operations Management | 3 |
| | 105 | MGT - 306 | Leadership Skills | 3 |
| | 106 | MGT - 401 | Business Policy | 4 |
| | 107 | MGT - 402 | Strategic Management | 3 |
| | 108 | MGT - 4xx | Elective (Management) | 3 |
| **Mathematics (MTH)** | 109 | MTH - 101 | Calculus & Analytical Geometry I (*) | 3 |
| | 110 | MTH - 102 | Business Mathematics | 3 |
| | 111 | MTH - 103 | Calculus & Analytical Geometry II (*) | 3 |
| | 112 | MTH - 104 | Business Statistics | 3 |
| | 113 | MTH - 105 | Applied Physics (*) | 3 |
| | 114 | MTH - 106 | Pre-Calculus | 3 |
| | 115 | MTH - 201 | Probability & Statistics (*) | 3 |
| | 116 | MTH - 202 | Linear Algebra & Differential Equations (*) | 3 |
| | 117 | MTH - 301 | Statistical Inference | 3 |
| **Project (PRJ)** | 118 | PRJ - 401 | Project I (*) | 3 |
| | 119 | PRJ - 402 | Project II (*) | 3 |

**Table 1.8: Offered Courses**

# Software Engineering Matrix

## B.Sc. (Hons) in Software Engineering

| CODE | | Semester 1 | Semester 2 | Semester 3 | Semester 4 | Semester 5 | Semester 6 | Semester 7 | Semester 8 |
|------|--|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| **CSC** | **COMPUTERS & ELECTRONICS** | | CSC-104 Digital Logic Design(4) **(NIL)** | | | CSC-302 Computer Architecture(3) **(CSC-104)** | **Lab Projects Course (3)** | | - |
| | **COMPUTER SCIENCE** | | CSC-105 Discrete Structure (3) **(NIL)** | | | | **Human Computer Interaction (3)** <br> CSC-307 Artificial Intelligence(3) **(CSC-108)** | **Software Project Management (3)** <br> CSC-403 Operating System (3) **(CSC-302)** | **Software Design and Architecture (3)** |
| | **NETWORKS & INTERNET** | MMS-101 Creating Digital Content (4) **(NIL)** | | | CSC-210 Data Communications and Networks(3) (CSC-107) | **Software Construction (3)** | | | |
| | **PROGRAMMING** | CSC-107 Fundamentals of Computers(4) **(NIL)** | CSC-108 Intro. to Programming (4) **(NIL)** | CSC-213 Object Oriented Programming (4) **(CSC-108)** <br> CSC-205 Computer Org. & Assembly (4) **(CSC-104)** | CSC-204 Data Structures (4) **(CSC-213)** <br> CSC-211 Database Management Systems(4) **(CSC-108)** | CSC-313 Object Oriented Analysis and Design(3) **(CSC-213)** <br> CSC-314 Study of Algorithms (3) **(CSC-204)** | CSC-406 Internet Programming (4) **(CSC-204)** | PRJ-401 Project-I (3) **(NIL)** <br> **Formal Methods in Software Engg (3)** | PRJ-402 Project-II (3) **(PRJ-401)** <br> CSC-410 Data Warehousing (4) **(CSC-211)** |
| | **SOFTWARE ENGINEERING** | | | | | | **Software Requirements Engineering 3)** | | **Software Quality Engineering (3)** |
| **HUM** | **HUMANITIES** | SLA-101A Communication Skills-I (3) **(NIL)** | SLA-101B Communication Skills-II (3) **(NIL)** | HUM-201 Islamic Studies (3) **(NIL)** | HUM-202 Pakistan Studies (3) **(NIL)** | HUM-301 Technical & Professional Comm(3) **(SLA-101-B)** | HUM-302 Psychology(3) **(NIL)** | HUM-401 Research Methods (3) **(HUM-301)** | HUM-402 Professional Ethics (3) **(SLA-101-B)** |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| MGT | MANAGEMENT | | MGT-101 Principles of Management (3) **(NIL)** | | French Language (3) | | FIN-102 Accounting-I (3) **(NIL)** | | |
| MTH | MATH & PHYSICS | MTH-101 Calculus & Analytical Geo-I (3) **(NIL)** / TCS-101 Physics (3) **(NIL)** | MTH-103 Calculus & Anal.Geo-II(3) **(NIL)** | MTH-201 Probability & Statistics(3) **(NIL)** | MTH-202 Linear Algebra & Differential Equations(3) **(MTH-103)** | | | | |
| Total Crd Hours. | 139 | 17 | 17 | 17 | 17 | 18 | 19 | 18 | 16 |

**Table 1.9: Software Engineering Matrix**

## Comparison of B.Sc. (Hons) in Software Engineering Curriculum with HEC Curriculum

**(A) COMPUTING COURSES (REQUIRED)**

| Sr No. | HEC Curriculum | Cr Hr | Sr. No. | SCIT Curriculum | Cr Hr. |
|---|---|---|---|---|---|
| 1 | Programming Fundamentals | 4 | 1 | Intro to Programming | 4 |
| 2 | Object Oriented Programming | 3 | 2 | Object Oriented Programming | 4 |
| 3 | Data structure and Algorithms | 4 | 3 | Data Structures | 4 |
| 4 | Digital Logic Design | 4 | 4 | Digital Logic Design | 4 |
| 5 | Operating Systems | 3 | 5 | Operating Systems | 3 |
| 6 | Database Systems | 4 | 6 | Database Management Systems | 4 |
| 7 | Introduction to software Development | 3 | | | |
| 8 | Computer Communication and Networks | 3 | 7 | Data Communication and Networks | 3 |
| 9 | Final year Project | 6 | 8 | Project (I & II) | 6 |
| 10 | Human Computer Interaction | 3 | 9 | **Human Computer Interaction** | 3 |
| | **Sub Total** | **37** | | **Sub Total** | **35** |

**(B) COMPUTING SUPPORTING COURSES (REQUIRED)**

| Sr No. | HEC Curriculum | Cr Hr | Sr. No. | SCIT Curriculum | Cr Hr. |
|---|---|---|---|---|---|
| 1 | Calculus and Analytical Geom. | 3 | 1 | Calculus –I | 4 |
| 2 | Probability and Statistics | 3 | 2 | Probability and Statistics | 4 |
| 3 | Linear Algebra and Applications | 3 | 3 | Linear Algebra & Differential Equation | 3 |
| 4 | Physics | 3 | 4 | Physics | 3 |
| | **Sub Total** | **12** | | **Sub Total** | **14** |

**(C) COMPUTING GENERAL EDUCATION COURSES (REQUIRED)**

| Sr No. | HEC Curriculum | Cr Hr | Sr. No. | SCIT Curriculum | Cr Hr. |
|---|---|---|---|---|---|
| 1 | English Comprehension and Composition | 3 | 1 | Communication Skills I | 3 |
| 2 | Technical and Business Writing | 3 | 2 | Technical & Professional Communication | 3 |
| 3 | Communication Skills | 3 | 3 | Communication Skills II | 3 |

| 4 | Islamic and Pakistan Studies | 3 | | 4 | Islamic studies | 3 |
|---|---|---|---|---|---|---|
| 5 | Professional Practices | 3 | 3 | 5 | Professional Ethics | 3 |
| | Sub Total | 15 | | | Sub Total | 15 |

**(D) SOFTWARE ENGG COURSES (REQUIRED)**

| Sr No. | HEC Curriculum | Cr Hr | | Sr. No. | SCIT Curriculum | Cr Hr |
|---|---|---|---|---|---|---|
| 1 | Software Construction | 3 | | 1 | **Software Construction** | 3 |
| 2 | Software Requirements Engineering | 3 | | 2 | **Software Requirements Engineering** | 3 |
| 3 | Formal Methods in Software Engineering | 3 | | 3 | **Formal Methods in Software Engineering** | 3 |
| 4 | Software Design and Architecture | 3 | | 4 | **Software Design and Architecture** | 3 |
| 5 | Software Quality Engineering | 3 | | 5 | **Software Quality Engineering** | 3 |
| 6 | Software Project Management | 3 | | 6 | **Software Project Management** | 3 |
| | Sub Total | 18 | | | Sub Total | 18 |

**(E) SOFTWARE ENGINEERING COURSES (ELECTIVE)**

| Sr No. | HEC Curriculum | Cr Hr | | Sr. No. | SCIT Curriculum | Cr Hr. |
|---|---|---|---|---|---|---|
| 1 | Artificial Intelligence | 3 | | 1 | Artificial Intelligence | 3 |
| 2 | Analysis of Algorithms | 3 | | 2 | Study of Algorithms | 3 |
| 3 | Computer Graphics | 3 | | 3 | **Lab Projects Course** | 3 |
| 4 | Software metrics | 3 | | 4 | Internet Programming | 4 |
| 5 | Web Engineering | 3 | | 5 | Computer Organization and Assembly | 4 |
| 6 | Information Systems Audit | 3 | | 5 | Object Oriented Analysis and Design | 3 |
| | Sub Total | 18 | | | Sub Total | 20 |

**(F) SOFTWARE ENGINEERING DOMAIN SPECIFIC (ELECTIVE)**

| Sr No. | HEC Curriculum | Cr Hr | | Sr. No. | SCIT Curriculum | Cr Hr. |
|---|---|---|---|---|---|---|
| 1 | Accounting | 3 | | 1 | **Accounting –I** | 3 |
| 2 | Data Warehousing | 3 | | 2 | Data Warehousing | 3 |
| | Sub Total | 6 | | | Sub Total | 6 |

**(G) COMPUTING SUPPORTING COURSE (ELECTIVE)**

| Sr No. | HEC Curriculum | Cr Hr | | Sr. No. | SCIT Curriculum | Cr Hr. |
|---|---|---|---|---|---|---|
| 1 | Advanced calculus | 3 | | 1 | Calculus-II | 3 |
| 2 | Digital Electronics | 3 | | 2 | Discrete Structures | 3 |
| 3 | Operations Research | 3 | | 3 | Computer Architecture | 3 |
| | Sub Total | 9 | | | Sub Total | 9 |

**(H) GENERAL EDUCATION ELECTIVES (UNIVERSITY ELECTIVES)**

| Sr No. | HEC Curriculum | Cr Hr | | Sr. No. | SCIT Curriculum | Cr Hr. |
|---|---|---|---|---|---|---|
| 1 | English Literature | 3 | | 1 | Creating Digital Content | 3 |
| 2 | Economics | 3 | | 2 | Pakistan Studies | 3 |
| 3 | Sociology | 3 | | 3 | Research Methods | 3 |
| 4 | Psychology | 3 | | 4 | Psychology | 3 |
| 5 | International Relations | 3 | | 5 | Principles of Management | 3 |
| 6 | French | 3 | | 6 | **French** | 3 |
| | Sub Total | 18 | | | Sub Total | 18 |
| | Grand Total | 133 | | | Grand Total | 135 |

**Table 1.10: COMPARISON OF SCIT PROGRAM WITH HEC CURRICULUM**

**Curriculum Breakdown**

| Semester | Course Table 1.10 | Math and Basic Science | | Core Courses | Humanities and Social Sciences | Technical Electives / Others |
|---|---|---|---|---|---|---|
| | | Math | Basic Science | | | |
| 1 | (A) Computing Courses (Required) | | | ✓ | | ✓ |
| 2 | (B) Computing Supporting Courses (Required) | ✓ | ✓ | ✓ | | |
| 3 | (C) Computing General Education Courses (Required) | | | ✓ | ✓ | |
| 4 | (D) Software Engineering Courses (Required) | | | ✓ | | ✓ |
| 5 | (E) Software Engineering Courses (Elective) | | | | | ✓ |
| 6 | (F) Software Engineering Domain Specific (Elective) | | | | | ✓ |
| 7 | (G) Computing Supporting Courses (Elective) | ✓ | | ✓ | | ✓ |
| 8 | (H) General Education (University Electives) | | | ✓ | ✓ | ✓ |

**Table 1.11: Curriculum Course Requirements**

| Courses/ Group of courses | Objectives | | | | | |
|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 |
| (A) Computing Courses (Required) | ✓ | ✓ | | ✓ | | |
| (B) Computing Supporting Courses (Required) | | | | | | |
| (C) Computing General Education Courses (Required) | | | | ✓ | ✓ | ✓ |
| (D) Software Engineering Courses (Required) | ✓ | ✓ | ✓ | ✓ | | |
| (E) Software Engineering Courses (Elective) | ✓ | ✓ | | ✓ | | |
| (F) Software Engineering Domain Specific (Elective) | | | | | | |
| (G) Computing Supporting Courses (Elective) | | | | | | |
| (H) General Education (University Electives) | | | | | | |

**Table 1.12: Standard 2-2 requirement**

**Standard 2-2: Theoretical background, problems analysis and solution design must be stressed within the program's core material.**

Indicate which courses contain a significant portion (more than 30%) of the elements in standard 2-2.

| Elements | Course (ref: Table 1.11) |
|---|---|
| Theoretical background | Group A , B, G |
| Problem analysis | Group A, B, D , E, F |
| Solution design | Group D, E |

**Table 1.13: Standard 2-2 requirement**

**Standard 2-3: The curriculum must satisfy the core requirements for the program, as specified by the respective accreditation body.**

- *Please refer to Standard 2- 1 (Table 1.10)*

**Standard 2-4: The curriculum must satisfy the major requirements for the program as specified by HEC, the respective accreditation body / councils.**

- *Please refer to Standard 2- 1 (Table 1.10)*

**Standard 2-5: The curriculum must satisfy general education, arts, and   professional and other discipline requirements for the program, as specified by the respective accreditation body / council.**

- *Please refer to Standard 2- 1 (Table 1.10)*

**Standard 2-6: Information technology component of the curriculum must be integrated throughout the program.**

- *Please refer to Standard 2- 1 (Table 1.9)*

**Standard 2-7: Oral and written communication skills of the student must be developed and applied in the program.**

- *Please refer to Standard 2- 1 (Table 1.10)*

**CRITERION 3: LABORATORY AND COMPUTING FACILITIES**

The School of Computer and Information Technology contain the following Labs:

**1.    Information Technology Lab**
This lab contains twenty five workstations and one laser printer. All required software for the B.Sc. (Hons) in Software Engineering program are available on each workstation.

**2.    Project Lab**
The lab contains twenty four workstations, one laser printer and a flatbed scanner. All the workstations have the required software for the B.Sc. (Hons) in Software Engineering program.

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

The above mentioned labs facilitate the students in performing lab exercises and projects relating to the course offered in Software Engineering program.

The following courses have lab exercises which are conducted in the above mentioned labs:

| | | |
|---|---|---|
| 1. | Creating Digital Content | (2 hours per week) |
| 2. | Introduction to Programming | (2 hours per week) |
| 3. | Event-Driven Programming | (2 hours per week) |
| 4. | Data Structures | (3 hours per week) |
| 5. | Object Oriented Programming and Design | (3 hours per week) |
| 6. | Internet Programming | (3 hours per week) |
| 7. | Software Construction | (3 hours per week) |
| 8. | Computer Organization and Assembly | (3 hours per week) |
| 9. | Lab Projects Course | (3 hours per week) |
| 10. | Project I | |
| 11. | Project II | |

With reference to above list of courses, Creating Digital Content, Introduction to Programming and Event-Driven Programming are guided lab courses in which instructions for lab experiments are provided by the Course Instructor. Sample of their guided lab instructions are provided in the table below:

| | Instructor: Shazia Rizwan |
|---|---|
| **Event Driven programming (CSC-206)-MBC** | |
| **Lab Exercise #1** | Max Marks: |
| | Time Allowed: 60 |
| Date: **09-Sep-2011** | **min** |

**Complete the following steps and show your work to the teacher for marking.**
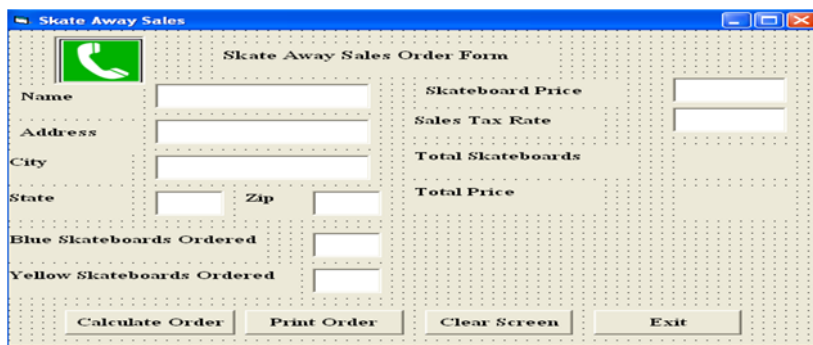*(Your attendance will be marked only if you complete this exercise.)*

The first thing we do is start driving the Visual Basic design environment. We learn how to start a new program, how to put buttons and other objects on a form. Then we learn how to save the program, run it, and debug it through the design environment.

**Exercise1**

1. Point to **Programs** on the start menu.
2. Point to **Microsoft Visual Studio 6.0**
3. Point to **Microsoft Visual Basic 6.0**
4. Click **open** on **Standard EXE** in **New Project** dialog box.
5. Identify all areas in the VB startup screen.
6. Check the tools available in the **Toolbox** window.
7. Study the properties of the Form object.
8. Change the caption property of the form to "**First Exercise**"
9. Change the Name property of the form to "**Frm1**"
10. Change the Name property of the project to "**Proj1**"
11. Add one label and five command buttons from the **toolbox** by double clicking on them.
12. Change the label caption to "**Your Degree Program**"
13. Change the caption of command buttons to **first, second third, Clear, and Exit**
14. Change the **Back Color** properties of all buttons according to your ideas
15. Change the Style property of the buttons to **Graphical**
16. Change the Fonts
17. For the Exit button, double click on it to go to code window and add **End** command
18. The button should be shown as **EXIT** button.
19. Add Print commands in the code windows of all buttons respectively:
    - Print "You have clicked on 1$^{st}$ button"
    - Print "You have clicked on 2nd button"
    - Print "You have clicked on 3$^{rd}$ button"
    - Form1.Cls
20. Run the Project with the **Start** button
21. Save the Project and Form.
22. Change the form just created to make it more attractive
23. Show your final form.

**Exercise2**

1. Add a text box to your form created in Exercise1.

2. Go to the click event of first button and add code to display the text : **YOU CLICKED THE FIRST BUTTON**

3. Go to the click event of 2nd button and add code to display the text : **YOU CLICKED THE SECOND BUTTON**

4. Change the **color** of the text box

5. Change the **font** and **size** of the text displayed in the text box.

6. Save your changes.

7. Show your final form for marking.


⬚ Back color of form = Form color

⬚ Border style = Fixed Dialog (user won't be able to resize the form at run time)

⬚ Control Box = False (to remove close X button from title of the form window)

---

| | |
|---|---|
| **Event Driven programming (CSC-206)-MBC**<br>**Lab Exercise #2**<br><br>Date: **30-Sep-2011** | Instructor: Shazia Rizwan<br>Max Marks:<br>Time Allowed: 60 **min** |

## Complete the following steps and show your work to the teacher for marking.

*(Your attendance will be marked only if you complete this exercise.)*

**Exercise1**

24. Load Visual Basic 6.0

25. Click **open** on **Standard EXE** in **New Project** dialog box.

26. Design the form as given below.

27. Enter the code for the **Quit** button as learned in the previous lab

28. Enter the code for the **Calculate** button as discussed in the lecture. (code is given below in case you missed the class)

29. Run the project and see the results.

30. This is being run through **Implicit Declaration**.

31. Now add the **Option Explicit** statement in the **General Declaration Section**

32. Try to run the project again.

33. You will find that the compiler is giving the error message as: **Variable not Defined"**

34. Now declare the **Quantity** and **Bill** variables using **Dim** statement

35. The **Quantity** should be an **Integer** as it represents number of cards purchased by the user.

36. The **Bill** amount is of type **long**

```
        Const price As Integer = 100
        quantity = Text1.Text
        bill = quantity * price
        Text2.Text = bill
```

**Exercise2**

8.  Start a new project and design the form as given below.
9.  In the picture box in the top left corner, you can insert any picture from the computer system or even from Internet.
10. The codes for adding functionalities will be added in the next lab.

**Event Driven programming (CSC-206)-MBC**
**Lab Exercise #5**

Max Marks:
Time Allowed: 60
**min**

Date: **21-Oct-2011**

**Complete the following steps and show your work to the teacher for marking.**
*(Your attendance will be marked only if you complete this exercise.)*

**Exercise1**

Create a new Form (Form1) in a project. Add two text boxes on this form along with two command buttons.
In the form load event, set the tab index of text box1 to 0 (zero)
Ask the user to enter a string in the first textbox (Text1).
On clicking the command button (command1), the entered string should be displayed in the second textbox (Text2).
The first textbox (Text1) should be empty afterwards.
First Command button should be disabled at the end of the click event.
The second command button (command2) will act as the exit

button.

**Exercise2**

Write an assignment statement that corresponds to each of the following algebraic equations:

   i. z = (x/y)+3
   ii. z = x/(y+3)
   iii. w = (u + v) /(s + t)
   iv. f = [2ab/(c+1)-t/(3(p+q))]$^{1/3}$
   v. y = (a+bx+cx$^2$-ax$^3$+bx$^4$)/(c+dx+cx$^2$-cx$^3$)
   vi. p = ai(1+i)$^n$/[(i+i)$^n$ − 1]

Answers :

i)_____

ii)_____

iii)_____

iv)_____

v)_____

vi)_____

**Submitted By:**

Name: _____

---

| | Instructor: Shazia Rizwan |
|---|---|
| **Event Driven programming (CSC-206)-MBC** <br> **Lab Exercise #6** | Max Marks: <br> Time Allowed: 60 |
| Date: **28-Oct-2011** | **min** |

**Practice Questions for Selection Structure:**

(Input box and Message Box must be used)

***Complete the following steps and show your work to the teacher for marking.***
*(Your attendance will be marked only if you complete this exercise.)*

**Exercise1**

Write the Click Event of a command button which can accept one input of score in EDP course and display "Well Done" if score is greater or equal to 85. It should display "Please Improve" if score is greater than 65 but lea than 85. "Poor Performance" is displayed otherwise.

**Exercise2**

Write the Click Event of a command button which can accept the integer value of **year** and determine if the entered year is **Leap year** or not. A message should be displayed to the user in this regard.

**Exercise3**

Write the Click Event of a command button which can accept an integer and determine if the entered input is **even** or **odd**. Proper message should be displayed to tell the user that the entered value is even or odd. Your program should be able to handle large values.

**Exercise4**

Write the Click Event of a command button which can accept three integers and determine the maximum value. The maximum values should be displayed with an appropriate message to the user.

---

**Event Driven programming (CSC-206)-MBC**
**Lab Exercise #7**

Date: **16-Nov-2011**

Instructor: Shazia Rizwan
Max Marks:
Time Allowed: 60 **min**

**Practice Questions for Iteration Structure:**

*Complete the following steps and show your work to the teacher for marking.*
*(Your attendance will be marked only if you complete this exercise.)*

**Exercise1**

Write a loop that will generate every third integer, beginning with i = 2 and continuing for all integers that are less than 100. Calculate the sum of those integers that are evenly divisible by 5.

**Exercise2**

Write the Click Event of a command button which can accept an integer value to generate table up to a specified range.

**Exercise3**

Write the Click Event of a command button which can accept an integer in Decimal number system and convert it into Octal number system. The number in octal system should be displayed to the user.  [Hint: you can also make use of an Array to store the octal value]

| | Instructor: Shazia Rizwan |
|---|---|
| **Event Driven programming (CSC-206)-MBC** **Lab Exercise #8** | Max Marks: Time Allowed: 60 **min** |
| Date: **18-Nov-2011** | |

**Practice Questions for Iteration Structure:**

**Complete the following exercises in a single project on the same form. Add different command buttons for each exercise and show your work to the teacher for marking.**

*(Your attendance will be marked only if you complete this exercise.)*

**Exercise1**

Complete exercise#1 of Lab5 since most of the students did not complete it.

**Exercise2**

Write the Click Event of a command button which can accept ten integers from the user in an array and display the maximum value in the array.

**Exercise3**

Write the Click Event of a command button which can accept five names in an array of strings. It gets a name from the user and displays whether the name is present in the array or not.

| | Instructor: Syed Hasnain Haider Gilani |
|---|---|
| **Creating Digital Content (CSC-109)** Lab Exercise #1 Date: September 30, 2011 | Max Marks: Time Allowed: 60 min |

**Complete the following steps and show your work to the teacher for marking.**
*(Your attendance will be marked only if you complete this exercise.)*

## WHAT DO I NEED TO BEGIN DESIGNING A HOME PAGE?

The first things you have to create your web page open a text editor such as Notepad (typing in all the text and tags). Save your web page as an HTML file using any appropriate name. Load the HTML file into the browser to see how your web page looks and works.

**Exercise1**

1.  Press the right button of your mouse on the desktop then perform the following task.
    **a.** New --> New Folder
2.  Start --> All Programs --> Accessories --> Notepad
3.  Save the Notepad file with .html extension "filename.html"
4.  **Start --> All Programs --> Internet Explorer--> open-->** browse the html file
5.  Switch back to Notepad to make any corrections, and then see the effect in internet explorer.

**Exercise2**

Design a web page using basic HTML container tags that will show the following contents as a result

Hi, my name is John Gilson.
This is my first attempt at a Web page

---

| | Instructor: Syed Hasnain Haider Gilani |
|---|---|
| **Creating Digital Contents (CSC-109)** | |
| **Lab Exercise #2** | Max Marks: |
| Date: October 04, 2011 | Time Allowed: 60 **min** |

**Complete the following steps and show your work to the teacher for marking.**
*(Your attendance will be marked only if you complete this exercise.)*

**Exercise1**

Design a web page using basic HTML container tags that will show the following contents as a result.

**DRESSING**

1/2 cup Mayonnaise

2 tbsp. Minced dill or sweet pickle

1 tsp. Prepared mustard

1/4 tsp. Onion powder

1 tsp. Granulated sugar

1 tbsp. Milk

**Exercise2**

Design a web page using basic HTML container tags that will show the following contents as a result with the help of unordered list tag.

    Be able to swim
    Wear a life jacket at all times
    Don't stand up or move around
    Don't overexert yourself
    Use a bow light at night

**Creating Digital Contents (CSC-109)**
**Lab Exercise #3**
Date: November 25, 2011

**Complete the following steps and show your work to the teacher for marking.**
*(Your attendance will be marked only if you complete this exercise.)*

<u>Exercise1</u>
Design a web page using basic HTML container tags that will show the following contents as a result with the help of nested unordered list tag.

    Be able to swim
    Wear a life jacket at all times
    Don't stand up or move around. If canoe tips,
        Hang on to the canoe
        Use the canoe for support and
        Swim to shore
    Don't overexert yourself
    Use a bow light at night

<u>Exercise2</u>
Design a web page using basic HTML container tags that will show the following contents as a result with the help of nested unordered list tag.

    Be able to swim
    Wear a life jacket at all times
    Don't stand up or move around. If canoe tips,

        Hang on to the canoe
        Use the canoe for support and
        Swim to shore

    Don't overexert yourself
    Use a bow light at night

**Creating Digital Contents (CSC-109)**
**Lab Exercise #4**
Date: November 11, 2011

**Complete the following steps and show your work to the teacher for marking.**
*(Your attendance will be marked only if you complete this exercise.)*

**Exercise1**

Design a web page using basic HTML container tags that will show the following contents as a result with the help of ordered list tag.

1. Be able to swim
2. Wear a life jacket at all times
3. Don't stand up or move around. If canoe tips,
4. Hang on to the canoe
5. Use the canoe for support and

**Exercise2**

Design a web page using basic HTML container tags that will show the following contents as a result with the help of nested and mixture of unordered and ordered list tags.

1. Seek expert advice about the area
   Get the best maps. On the map select
       landmarks
       mountains
       Lakes
   Get a good compass and
       check slope of land
       check direction of flowing streams
2. If there is snow on the ground, stay close to:
   Roads
   trails and
   waterways

**Creating Digital Contents (CSC-109)**
**Lab Exercise #5**
Date: 25-11-2011

**Complete the following steps and show your work to the teacher for marking.**
*(Your attendance will be marked only if you complete this exercise.)*

**Exercise1**

Design a web page using basic HTML container tags that will provide a text link of BNU. After clicking this link your browser will display the BNU web portal.(**http://bnu.edu.pk/index.php**)

**Exercise2**

Design a web page using basic HTML container tags that will provide an image as a link of BNU. After clicking this image link your browser will display the BNU web portal.



Beaconhouse National University

**Table 1.14: Guided Lab Courses**

For the remaining courses in the above list, the Course Instructor awards the lab assignments to the students which they are required to perform in their own time. Sample of such assignments is given in table below:

**Table 1.15: Assignments Lab Courses**

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

Each of the above labs is maintained by a Lab Administrator who is responsible for keeping the computer's hardware and software in working condition. He is also required to ensure that networking of the computers is working properly and Internet is available at each workstation.

The Lab Administrator seeks guidance from the concerned Course Instructor regarding conduct of experiments pertaining to different courses. Further, the Lab Administrator is supported in his job function by the Information Technology Resource Center Staff located in the Server Room.

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

The facilities mentioned in the above labs are adequate to support the objectives of the B.Sc. (Hons) in Software Engineering program. Students of this program who are residing in the University Hostel have been provided computers which are equipped with necessary software along with Internet access.

**CRITERION 4: SUPPORT AND ADVISING**

Student must have adequate support to complete the program in a timely manner and must have ample opportunity to interact with their instructors and receive timely advice about program requirements and career alternatives. To meet this criterion the standards in this section must be satisfied.

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

The B.Sc. (Hons) in Software Engineering program comprises of forty two (42) courses spread over four year (8 semesters) of full time study.

In each semester, normally five courses are offered which constitute a study load of 15 to 17 credit hours. Each course in the B.Sc. (Hons) in Software Engineering program is offered once in an academic year, either in the Spring or Fall semester.

The distribution of courses in each semester is done in a balanced way such that there are four computer science courses and one a non-computer science course in each semester.

Elective courses are offered depending upon the availability of the Instructor and the interest of the students.

The student of the program encouraged to take up elective courses from other Schools / Departments of the University. The students have a wide availability of courses from which to choose from to satisfy their elective requirement.

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

**EFFECTIVE FACULTY / STUDENT INTERACTION**

There is a strong interaction between Course Instructor and the students during the conduct of the course. Students are free to ask any relevant questions from the Instructor during the class as well as after class hours. Student can also communicate with the Instructor through electronic mail.

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

- The prospectus of the University is published every year and contains detail information about the program. Along with study plan for each semester. Student's queries are also addressed in Orientation Session organized before the start of academic year by the School of Computer & Information Technology.

- The faculty member of the School along with the Dean are available to provide guidance and counseling relating to all academic matters, as and when required. Students are free to discuss their academic and personal problems with the Dean, Faculty and Coordinator of the School.

- Every effort made to satisfy the student's queries and provide solution to his / her problems.

- Most Visiting Faculty Members are experienced professionals and the students have opportunity to discuss with then their queries regarding academic and professional matters.

- By means of departmental bulletin board, students have updated information about seminars, workshops, conferences and other technical events in the field of Computer Science and Software Engineering.

**CRITERION 5: PROCESS CONTROL**

The processes by which major functions are delivered must be in place, controlled, periodically reviewed, evaluated and continuously improved. To meet this criterion a set of standards must be satisfied.

**Standard 5-1: The process by which students are admitted to the program must be based on quantitative and qualitative criteria and clearly documented. This process must be periodically evaluated to ensure that it is meeting its objectives.**

- **PROGRAM ADMISSION CRITERIA**

  Applicants who have passed Intermediate in minimum 2nd division are eligible to apply to the B.Sc. (Hons) in Software Engineering.

  As part of the admission process, all the applicants are required to take an Admission test and appear in an interview.

- **PROGRAM/CREDIT TRANSFER**

  The School refers all transfer cases to the University Equivalence Committee. The Equivalence Committee, after thorough scrutiny in light of the HEC guidelines, gives approval for all transfers.

- **EVALUATION OF ADMISSION CRITERIA**

  The admission criterion is reviewed annually in light of the HEC guidelines. The Board of Studies meets twice a year and reviews all matters regarding the program. In addition Academic Council of the University also reviews the Admission procedure and subsequent approval is taken from the Board of Governors of the University.

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

- **PROCESS OF REGISTRATION**

  The process of registration being followed at the School of Computer and Information Technology is a two-pronged process. The coordinator under the supervision of the Dean of the School keeps a record of the student registration. This includes the registration on the program and the courses. This record is then passed on to the Registrar of the University and the Examination & Quality Assurance departments.

- **MONITORING STUDENTS PROGRESS**

  The student progress is carefully monitored throughout their academic stay at the School. The program follows continuous assessment procedures. The results of the students are carefully recorded and monitored by the School and passed on to the Examination and Quality Assurance department. The faculty, Head of Department and the Dean meet on a regular basis to discuss all student related issues. Attendance records, class performance records of all students are also maintained by the School. Transcripts are prepared by the examination department at the end of every semester. These transcripts are mailed to the students at the end of the semester.

- **EVALUATION AND IMPROVEMENT**

  The process is evaluated by conducting periodical peer reviews.

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

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- **FACULTY RECRUITEMENT PROCESS**

  The School of Computer and Information Technology follows a thorough process for the recruitment of faculty in line with the BNU and HEC guidelines. The process begins with identification of faculty (preferably foreign qualified). They are then invited to give mock lectures, which are attended by the Dean and Permanent Faculty Members of the School. Based on the mock lecture, the School of Computer & Information Technology proposes their name to University HR Department so that the formal recruitment process may begin. These cases are then put before the Selection Board that interviews the candidates. On the recommendation of the Selection, the Board of Governors of BNU give the final approval.

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

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

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

**Standard 5-5: The process that ensures that graduates have completed the requirements of the program must be based on standards, effective and clearly documented procedures. This process must be periodically evaluated to ensure that it is meeting its objectives.**

- The Administrative Coordinator maintains complete records of the students. These records are reviewed at the start and end of every semester to ensure the student is progressing and meeting all requirements of the program. The Registrar office and Quality Assurance department maintain files on each student. These files contain past and ongoing academic record of the students. At the end of each semester these records are reviewed as a means to check student performance.

At the time of graduation the record of each student is thoroughly scrutinized to ensure that the student has fulfilled all requirements of the program. After ensuring that all requirements have been met the student is allowed to graduate.

## CRITERION 6: FACULTY

Faculty members must be current and active in their discipline and have the necessary technical depth and breadth to support the program. There must be enough faculty members to provide continuity and stability, to cover the curriculum adequately and effectively, and to allow for scholarly activities. To meet this criterion the standards in this section must be satisfied.

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

- Complete the following table indicating program areas and number of faculty in each area.

| Sr. | Course | Course Code | Cr. Hours | Teacher | Qualification |
|---|---|---|---|---|---|
| **4th Year** | | | | | |
| 1 | Software Project Management | CSC-412 | 3 | Nouman Ali Shah | MS (CS) |
| 2 | Research and Professional Issues | HUM-401 | 3 | Mohammad Rashid | M.Sc. (Stat) |

| | | | | | |
|---|---|---|---|---|---|
| 3 | Accounting -I | FIN-102 | 3 | Hafiz Imtiaz | M.Com |
| 4 | Formal Methods in SE | CSC-413 | 3 | Husnain Haider | MS (CS) |
| 5 | Operating Systems | CSC-403 | 3 | Malik Tahir Hassan | MS (CS) |
| 6 | Project - I | PRJ-401 | 3 | Dr. Khaver Zia | Ph.D. |
| **3rd Year** | | | | | |
| 1 | Computer Architecture | CSC-302 | 3 | Dr. M. Kamran | Ph.D. |
| 2 | Software Construction | CSC-316 | 4 | Khawaja Muhammad Fahd | MS (CS) |
| 3 | Technical and Prof. Communication | HUM-301 | 3 | Bushra Butt | MA (English) |
| 4 | Study of Algorithms | CSC-314 | 3 | Nouman Ali Shah | MS (CS) |
| 5 | Object Oriented Analysis and Design | CSC-313 | 3 | Ambreen Akhtar | MS (CS) |
| **2nd Year** | | | | | |
| 1 | Computer Org. and Assembly Language | CSC-205 | 4 | Muhammad Rafay Chughtai | MS (EE) |
| 2 | Object Oriented Programming | CSC-213 | 4 | Ambreen Akhter | MS (CS) |
| 3 | Probability and Statistics | MTH-201 | 3 | Lubna Jannisar | M.Sc. (Stat) |
| 4 | Pakistan Studies | HUM-202 | 3 | Tahmina Mushtaq | MA |
| 5 | Principles of Management | MGT-101 | 3 | Saima Waleed | MBA |
| **1st Year** | | | | | |
| 1 | Foundation English | SE-101A | 3 | Amna Shafqat | MA |
| 2 | Fundamentals of Computer | CSC-107 | 4 | Nouman Ali Shah | MS (CS) |
| 3 | Creating Digital Content | CSC-109 | 4 | Husnain Haider | MS (CS) |
| 4 | Calculus & Analytical Geometry-I | MTH-101 | 3 | Shariq Iqbal | M.Sc. (Maths) |
| 5 | Applied Physics | MTH-105 | 3 | Muhammad Salim Butt | M.Sc. (Physics) |

| Sr. | Course | Course Code | Cr. Hours | Teacher | Qualification |
|-----|--------|-------------|-----------|---------|---------------|
| 1 | Accounting -I | FIN-102 | 3 | Hafiz Imtiaz | M.Com |
| 2 | Calculus & Analytical Geometry-I | MTH-101 | 3 | Shariq Iqbal | M.Sc. (Maths) |
| 3 | Communication Skills-I | SLA 101A | 3 | ELU (School of Edu) | |
| 4 | Computer Architecture | CSC-302 | 3 | Dr. M. Kamran | Ph.D. |
| 5 | Computer Networks | CSC-203 | 3 | Aadil Zia Khan | MS (CS) |
| 6 | Computer Org. and Assembly Language | CSC-205 | 4 | Farhan Mushtaq | MS (EE) |
| 7 | Creating Digital Content | MMS-101 | 4 | Sameen Reza | M.Sc. (CS) |
| 8 | ERP Systems | CSC-310 | 3 | Khaver Zia | Ph.D. |
| 9 | Event Driven Programming | CSC-206 | 4 | Anzar Aziz | M.Sc. (CS) |
| 10 | Fundamentals of Computers | CSC-107 | 4 | Shazia Rizwan | MS (CS) |
| 11 | Islamic Studies | HUM-201 | 3 | Khaver Zia | Ph.D. |
| 12 | Management of Information Systems | MGT-201 | 3 | Sabeen Inam | BBIT |
| 13 | Object Oriented Analysis and Design | CSC-313 | 3 | Ambreen Akhtar | MS (CS) |
| 14 | Object Oriented Programming | CSC-213 | 4 | Muhammad Sami Ullah | MS (CS) |
| 15 | Physics | TCS-101 | 3 | Baais e Alam | M.Sc. (Physics) |
| 16 | Principles of Management | MGT-101 | 3 | Khurram Zafar | MS (EE) |
| 17 | Probability and Statistics | MTH-201 | 3 | Lubna Jannisar | M.Sc. (Stat) |
| 18 | Project Management | MGT-301 | 4 | Shazia Rizwan | MS (CS) |

| | | | | | |
|---|---|---|---|---|---|
| 19 | Research and Professional Issues | HUM-401 | 3 | Mohammad Rashid | M.Sc. (Stat) |
| 20 | Software Construction | CSC-316 | 3 | Malik Jahan Khan | MS (CS) |
| 21 | Software Design and Architecture | CSC-414 | 3 | Waqar Ahmed | MS (CS) |
| 22 | Study of Algorithms | CSC-314 | 3 | Sameen Reza | M.Sc. (Stat) |
| 23 | Technical and Prof. Communication | HUM-301 | 3 | Amna Shafqat | MA |

**Table 1.16: Faculty Distribution by Program Area**

- **FACULTY RESUMES**

**Standard 6-2: All faculty members must remain current in the discipline and sufficient time must be provided for scholarly activities and professional development. Also, effective programs for faculty development must be in place.**

- All faculty members in the School of Computer and Information Technology should have a Master's Degree from foreign or local university. In addition they should be current in their area of expertise and preferably they should have taught the course in a similar program elsewhere.

- Full time faculty members are assigned a maximum load of three courses which entails 9 to 12 semester credit hour of student contact. Keeping in view this load the fulltime faculty has sufficient time for professional development. Furthermore, the fulltime faculty is not given any teaching assignments in summer and they can fully devote their summer time for professional development.

- Faculty is encouraged to participate in seminars, workshops and conferences in the area of their interest.

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

- The faculty member is provided a congenial working environment which is conducive for teaching and research. Air-conditioned offices workstations with internet connectivity and access to digital library are standard features of the faculty working environment.

- Faculty members can purchase any book of their choice without hindrance. Faculty can also undertake professional development training and also get leave for improving their qualification at any other Institution, subject to providing a service bond.

- The performance of faculty is appraised on annual basis and they are awarded annual increment based on the appraisal.

- All the above features help in motivating the faculty in their job.

- Survey of faculty is conducted annually (on HEC approved Proforma # 5) in which the faculty provides its input on work environment and their own performance during the year.

- The survey is quite effective in faculty assessing, the views of the faculty for improving the work environment and facilities.

## CRITERION 7: INSTITUTIONAL FACILITIES

Institutional facilities, including library, classrooms and offices must be adequate to support the objective of the program. To satisfy this criterion a number of standards must be met.

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

- *Please refer to Criterion 6*

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

**Professional Development**

The librarians have been trained in MARC records development and cataloging in a new integrated Library System (ILS). Further, training in the use of the software has been given. Any Archives and Records Management Course for all librarians and representatives of each university department have been trained. The need for this has arisen as a new Archives and a Records Management program has been initiated at the University.

**Collection Development**

A collection policy has been formulated to guide the library in its development of the collections (see Appendix A)

**Library Committee**

The BNU Library is guided by the Library Committee for effective management. Dean, Heads of schools are members and library liaisons are nominated from all departments.

**Annual Report**

The Chief Librarian prepares an annual report to present to the Vice Chancellor of the University, highlighting the accomplishment, problems and needs of the library. Utilization of resources and statistical data is presented in this report.

**Books (print from)**

| | |
|---|---|
| Total: | 10558 |
| During 2010-11: | 0778 |
| Books (Electronic): | 52000 (through e-brary) |
| Reports: | 1685 |
| DVDs: | 901 |
| VHS: | 626 |
| Art Catalog: | 900 |

**Government Documents:**

Pakistan Economic Survey 1980 to 2010-11
State Bank of Pakistan Report
All 5 years Plans        (Soft Copy is also available)
Annual Plans        (Soft Copy is also available)
50 Years Pakistan Statistics of Pakistan
Ten Years Perspective Development Plan 2001-11
Pakistan Education Policy
Pakistan Education Statistics 2007-2008
Pakistan Demographic & health Survey 2006-07
Punjab University Calendars
District Census Reports 1998
HEC Annual Reports
HEC Curriculums 2009, 2010
Judicial statistics of Pakistan Annual Reports
Vice Chancellor Reports
Punjab Development Statistics
Pakistan Engineering Congress Reports sessions 1983, 1984, 1985, 1992
Pakistan in the 21st Century: Vision 2030
Promise, Policy, Performance: Two Years of People Government 2008-2010

**Library Budget**

- Annual Budget of BNU Library is Rs. 5.9 million

**BNU Publications (Thesis)**

| | |
|---|---|
| Psychology Clinical Reports: | 06 |
| School of Education: | 29 |
| School of Mass Communication: | 55 |
| SSS-Economics: | 06 |
| School of IT: | 08 |
| School of Liberal Arts: | 06 |
| IPP Reports: | 2008, 2009, 2010 |
| The Maya Tree: Vol. 1 | Fall 2009 |
| Students Degree Shows: | Annually |
| Prospectus: | Annually |
| SVAD/SA Prospectus: | Annually |
| Faculty Catalogs | Arts Catalogs |
| Convocation Gazette: | $1^{st} – 5^{th}$ |
| BNU Gazette (news letter) | 3 /years |
| Research Journals (Print) | 050 |
| Research Journals (electronic) | 6277 |

BNU Library URL:
([http://WWW.bnu.edu.pk/index.php?otion=com_content&view=article&id=165&ltemid=484](http://WWW.bnu.edu.pk/index.php?otion=com_content&view=article&id=165&ltemid=484))

| | |
|---|---|
| Library Membership: | 1437 |
| Faculty: | 0198 |
| Students: | 1179 |
| Staff: | 0060 |

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

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- **CLASSROOMS:**

    - All the classrooms in the School of Computer and Information technology are air-conditioned and have multimedia projector / LCD screens to help in the teaching / learning process.

    - The average class size is 25 students so that instruction can be imparted to students in an effective manner

**FACULTY OFFICES:**

- ***Please refer to Standard 6- 3***

The institution's support and the financial resources for the program must be sufficient to provide an environment in which the program can achieve its objectives and retain its strength.

| Facility | Description |
|---|---|
| Land | The total land area of Beaconhouse National University's New Campus is 33 acres. |
| Buildings | The built-up area of the Beaconhouse National University New Campus is 322,000 sqft. In Phase – I, the New Campus has three academic blocks, one central block and one administration block.<br>The first academic block comprising 107,000 sqft areas is operational at the New Campus. The second academic block comprising 56,000 sqft areas is scheduled to start its operation in September, 2011. The remaining buildings are at different stages of construction. |
| Roads network & Parking | BNU has an internal road network of 1.5 Km. This road links different academic and administrative buildings. Walkways on the sides of the roads have been constructed for easy movement of students and staff. Fire hydrants at different points along the road have also been provided. The New Campus in phase – I has parking space for 400 vehicles. The adjoining areas of the campus can accommodate more than 600 vehicles. |
| Lawns & Open Spaces | BNU is an environment friendly organization. In the campus design phase special attention has been paid to maintaining bio-diversity of the area. More than 50 % of the campus spaces have been left open and green. Each of the academic and other blocks has a lawn attached to it and is equally used by student, faculty and staff for academic and recreational purposes. The total cost of the planned landscape is Rs.10 m. |
| ICT | BNU's focus on information and communication technologies is evident from the 1800 nodes system planned for the campus. Already 600 nodes are active providing the users internet connection and IP telephony facility. This back bone is also meant for IP surveillance and access control systems for the buildings. |
| Sports facilities | Opportunities to participate in sports and extra-curricular events at BNU exit. The University already has set up different indoor and outdoor sports facilities for students. A football field with dimensions of 180 ft x 330 ft is available. This facility also has a cricket turf for hard ball matches. The university has also set up badminton court and table tennis play areas for students. |
| Canteen | BNU is making significant investment in setting up a four floor purpose built cafeteria for its students, faculty and staff. Work on the structure is being carried out these days. Once completed this facility will provide dining facility to students, staff and faculty. The lower ground floor will comprise an executive dining hall for faculty and senior staff of the university. The ground |

| | |
|---|---|
| | floor would comprise of a restaurant area offering variety of foods and drinks. The first floor of the cafeteria would be reserved for female students and contain a common room and a prayer area. The top floor of the cafeteria would include separate gyms and work out areas for male and female students. The new canteen would provide campus community the opportunities to find some time to relax and enjoy in free time. Like other campus areas, the cafeteria would have Wi-Fi facilities on all floors. |
| **Furniture** | Ergonomically designed furniture has been planned across the campus. Services of design firms have been hired to meet the requirements for studios and classrooms. |

**Table 1.17: Facilities**

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

- The faculty of School of Computer and Information Technology market based salaries along with standard service benefits i.e. Provident Fund, Annual Leave, Medical Leave, and Medical Insurance.

- The Institute has sufficient budgeted fund to support the faculty. The Institution also has funds to support faculty needs for teaching and research purposes.

- The School of Computer and Information Technology has three Coordinators to handle all Administrative and Coordination tasks, so that the faculty is free to concentrate on teaching and research.

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

- The School of Computer and Information Technology does not have Master Program therefore, there are no graduate students.

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

- **LIBRARY**

  - *Please refer to Standard 7- 2*

- **LABORATORY**

  - *Please refer to Criterion 3*

- **COMPUTING FACILITIES**

  - *Please refer to Standard 2- 1*

| Criterion 1 - Program Mission, Objectives and Outcomes | Weight = 0.05 | | | | |
|---|---|---|---|---|---|
| | Score | | | | |
| | 5 | 4 | 3 | 2 | 1 |
| Does the program have documented outcomes for graduating students? | 5 | | | | |
| Do these outcomes support the program objectives? | | 4 | | | |
| Are the graduating students capable of performing these outcomes? | | 4 | | | |
| Does the department assess its overall performance periodically using quantifiable measures? | | | 3 | | |
| Is the result of the program assessment documented? | | | 3 | | |
| Total Encircled Value (TV) | 19 | | | | |
| Score 1 (S1) = {TV / (No. of Questions * 5 )} * 100 * Weight | 3.80 | | | | |

| Criterion 2 - Curriculum Design and Organization | Weight = 0.20 | | | | |
|---|---|---|---|---|---|
| | Score | | | | |
| | 5 | 4 | 3 | 2 | 1 |
| Is the curriculum consistent? | | 4 | | | |
| Does the curriculum support the program's documented objectives? | 5 | | | | |
| Are theoretical background, problem analysis and solution design stressed within the program's core material | 5 | | | | |
| Does the curriculum satisfy the core requirements laid down by respective accreditation bodies? (Refer to appendix A of the Self Assessment Report Manual) | 5 | | | | |
| Does the curriculum satisfy the major requirements laid down by HEC and the respective councils / accreditation bodies? (Refer to appendix A of Self Assessment Manual) | 5 | | | | |
| Does the curriculum satisfy the general education, arts and professional and other discipline requirements as laid down by the respective body / councils? (Refer to appendix A of Self Assessment Manual) | | 4 | | | |
| Is the information technology component integrated throughout the program? | 5 | | | | |
| Are oral and written skills of the students developed and applied in the program? | 5 | | | | |
| Total Encircled Value (TV) | 38 | | | | |
| Score 2 (S2) = {TV / (No. of Questions * 5)} * 100 * Weight | 19.00 | | | | |

| Criterion 3 - Laboratories and Computing Facilities | Weight = 0.10 | | | | |
|---|---|---|---|---|---|
| | Score | | | | |
| | 5 | 4 | 3 | 2 | 1 |
| Are laboratory manuals / documentation / instructions etc. for experiments available and ready accessible of faculty and students? | | | | | 1 |
| Are there adequate number of support personnel for instruction and maintaining the laboratories? | | | | 2 | |
| Are the University's infrastructure and facilities adequate to support the program's objectives? | | | | 2 | |
| Total Encircled Value (TV) | 5 | | | | |
| Score 3 (S3) = {TV / (No. of Questions * 5 )} * 100 * Weight | 3.33 | | | | |

| Criterion 4 - Student Support and Advising | Weight = 0.10 | | | | |
|---|---|---|---|---|---|
| | Score | | | | |
| | 5 | 4 | 3 | 2 | 1 |
| Are the courses being offered in sufficient frequency and number for the students to complete the program in a timely manner? | | 4 | | | |
| Are the courses in the major area structured to optimize interaction between the students, faculty and teaching assistants? | | 4 | | | |
| Does the University provide academic advising on course decisions and career choices to all students? | | | | 2 | |
| Total Encircled Value (TV) | 10 | | | | |
| Score 4 (S4) = {TV / (No. of Questions * 5 )} * 100 * Weight | 6.67 | | | | |

| Criterion 5 - Process Control | Weight = 0.15 | | | | |
|---|---|---|---|---|---|
| | Score | | | | |
| | **5** | **4** | **3** | **2** | **1** |
| Is the process to enroll students to a program based on quantitative and qualitative criteria? | | | 3 | | |
| Is the process above clearly documented and periodically evaluated to ensure that it is meeting its objectives? | | | 3 | | |
| Is the process to register students in the program and monitoring their progress documented? | | | 3 | | |
| Is the process above periodically evaluated to ensure that it is meeting its objectives? | | | 3 | | |
| Is the process to recruit and retain faculty in place and documented? | | 4 | | | |
| Are the processes for faculty evolution & promotion consistent with the institution mission? | | 4 | | | |
| Are the processes in 5 and 6 above periodically evaluated to ensure that they are meeting their objectives? | | | 3 | | |
| Do the processes and procedures ensure that teaching and delivery of course material emphasize active learning and that course learning outcomes are met? | 5 | | | | |
| Is the process in 8 above periodically evaluated to ensure that it is meeting its objectives? | 5 | | | | |
| Is the process to ensure that graduates have completed the requirements of the program based on standards and documented procedures? | | 4 | | | |
| Is the process in 10 above periodically evaluated to ensure that it is meeting its objectives? | | | 3 | | |
| Total Encircled Value (TV) | **40** | | | | |
| **Score 5 (S5) = {TV / (No. of Questions * 5 )} * 100 * Weight** | **10.91** | | | | |

| Criterion 6 - Faculty | Weight = 0.20 | | | | |
|---|---|---|---|---|---|
| | Score | | | | |
| | 5 | 4 | 3 | 2 | 1 |
| Are there enough full time faculty members to provide adequate coverage of the program areas / courses with continuity and stability? | | | 3 | | |
| Are the qualifications and interests of faculty members sufficient to teach all courses, plan, modify and update courses and curricula? | 5 | | | | |
| Do the faculty members possess a level of competence that would be obtained through graduate work in the discipline? | 5 | | | | |
| Do the majority of faculty members hold Ph.D. degree in their discipline? | | | | | 1 |
| Do faculty members dedicate sufficient time to research to remain current in their disciplines? | | | | | 1 |
| Are there mechanisms in place for faculty development? | | | 3 | | |
| Are faculty members motivated and satisfied so as to excel in their professions? | | 4 | | | |
| Total Encircled Value (TV) | **22** | | | | |
| **Score 6 (S6) = {TV / (No. of Questions * 5 )} * 100 * Weight** | **12.57** | | | | |

| Criterion 7 -Institutional Facilities | Weight = 0.10 | | | | |
|---|---|---|---|---|---|
| | Score | | | | |
| | 5 | 4 | 3 | 2 | 1 |
| Does the institution have the infrastructure to support new trends such as e-learning? | | | | 2 | |
| Does the library contain technical collection relevant to the program and is it adequately staffed? | | | 3 | | |
| Are the class rooms and offices adequately equipped and capable of helping faculty carry out their responsibilities? | | 4 | | | |
| Total Encircled Value (TV) | **9** | | | | |
| **Score 7 (S7) = {TV / (No. of Questions * 5 )} * 100 * Weight** | **6.00** | | | | |

| Criterion 8 - Institutional Support | Weight = 0.10 | | | | |
|---|---|---|---|---|---|
| | Score | | | | |
| | 5 | 4 | 3 | 2 | 1 |
| Is there sufficient support and finances to attract and retain high quality faculty? | 5 | | | | |
| Are there an adequate numbers of high quality graduate students, teaching assistants and Ph.D. students? | | | | 2 | |
| Total Encircled Value (TV) | 7 | | | | |
| Score 8 (S8) = {TV / (No. of Questions * 5 )} * 100 * Weight | 7.00 | | | | |

| Overall Assessment Score = S1 + S2 + S3 + S4 + S5 + S6 + S7 + S8 = | 69.28 |
|---|---|

| Remarks: |
|---|