# RIPHAH INTERNATIONAL UNIVERSITY

## ISLAMABAD


# SELF ASSESSMENT REPORT

## PhD Electrical Engineering

### Faculty of Engineering & Applied Sciences (FEAS)

**30 June 2017**

| | |
|---|---|
| **Prepared by:** | **Faculty of Engineering & Applied Sciences** |
| **Reviewed and Edited by:** | **Quality Enhancement Cell** |

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# List of Annexure

## 1.0 Executive Summary

This report is being prepared almost at the end of the assessment cycle for selected programs of Riphah International University, as per requirements of Higher Education Commission (HEC). Quality Enhancement Cell (QEC) was formed in Riphah International University in Oct 2009. Program Team Members of all five faculties, notified by University, worked with Dir QEC to pursue the application of Self-Assessment Manual in their respective departments. From each faculty one program was selected.

In this report, Faculty of Engineering and Applied Sciences (FEAS), **PhD (Electrical Engineering)** was selected for self-assessment, evaluation and improvements. A strong commitment of Respected Vice Chancellor to support QEC made the difference and resultantly, a cycle of assessment is about to complete.

### 1.1 Objectives

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

a To implement Self-Assessment Manual in selected program with a view to improve quality in higher education.

b To identify the areas requiring improvements in order to achieve objectives through desired outcomes.

### 1.2 Execution

A soft copy of self-assessment manual was given to all faculty members. Quality Awareness Lecture and Workshop on preparation of Self-Assessment Report (SAR) was arranged for the Deans/In-charge Programs and Program Team (PT) Members of the selected program. Hard copies of HEC issued 10 proformas, 8 criterion and 31 standards were provided to PT members to evaluate their respected program against defined standards. The PT members with an intimate support and follow up of QEC, completed the SAR and forwarded to QEC in given time frame.

After reviewing SAR, QEC arranged visit of Assessment Team to the selected program. Dir QEC accompanied the AT Team and participated in discussions with In-charge Program / Program Team members and available faculty members.

The AT during visits, indicated salient points of the SAR, account of its discussions with the faculty members, improvements required in the infrastructure, syllabi and training of the faculty and support staff.

The implementation plan indicates the resources required to improve the infrastructure, environment in the classes and E-Learning. The tasks have been completed on fast track by the combined efforts of Head of Department, QEC and Registrar's Office.

At the completion of Self-Assessment cycle, QEC is going to submit the hard and soft copy of SAR to HEC before 30 June 2017.

**Director**
**Quality Enhancement Cell**

# Self-Assessment Report

## 2.0 Introduction

Riphah International University is a private university, chartered by the Federal Government of Pakistan in 2002. The university was established with a view to produce professionals with Islamic moral and ethical values. The Riphah International University is committed to promote and impart quality education with character building of the new generation in the light of Islamic principles and values. Riphah International University is committed to a value based integrated educational philosophy. It is running 10 faculties in 3 different campuses.

### 2.1 University Mission Statement

Establishment of state of the art educational institutions with a focus on inculcation of Islamic ethical values.

### 2.2 Faculty of Engineering & Applied Sciences (FEAS)

Faculty of Engineering & Applied Sciences (FEAS) is running following programs:

- BS. Electrical Engineering (Communication) - **Accredited by PEC**
- BS. Electrical Engineering (Electronics) - **Accredited by PEC**
- BS. Bio-Medical Engineering - **Accredited by PEC**
- MS Electrical Engineering
- MS Electrical Engineering3
- PhD Electrical Engineering

### 2.3 Program Selected

Riphah International University selected the **Doctor Of Philosophy (PhD) in Electrical Engineering** program for Self-Assessment Report (SAR) for the year 2016-17 under the directives of HEC.

The selected program has been approved by the Board of Advance Studies & Research (BASR) and Academics Council of the University. The program has got inbuilt mechanism for the revision

of syllabi, has competent faculty and adequate infrastructure. New and modern tools have been introduced in the program to conduct research and quality teaching.

## 2.4 Program Evaluation

The program is being evaluated based on 8 criterion and 31 standards as given in the Self-Assessment Manual provided by Higher Education Commission (HEC).

# 3.0 Criterion 1: Program Mission, Objectives and Outcomes

## 3.1 Standard 1-1

**The program must have documented measurable objectives that support institution mission statements.**

### 3.1.1 Program Mission Statement

1. Deliver innovative and responsive interdisciplinary education and research output of high quality;
2. Educate students to develop both theoretical engineering and applied capabilities which are analytical, creative, systematic, critical and independent; and
3. Provide initiatives to both faculty and students to conduct practical research in advanced areas of electrical engineering.

### 3.1.2 Program Objectives

The program is designed to achieve the following objectives on completion of degree:

1. To prepare the students to pursue higher education in universities of repute.
2. Gaining regional and international recognitions through providing high quality of engineering and research publications at technical conferences and journals
3. To enable the students to pursue career in related field.
4. To prepare the students to step into research and development (R&D) activities in the related field.

### 3.1.3 Alignment of Program Objectives with Program & University Mission Statements

Program objectives intend to impart not only technical information to students but moral and ethical information as well. Riphah International University provides a platform to students to get knowledge of their desired field and learn the Islamic ways in order to carry out their duties.

### 3.1.4 Main Elements of Strategic Plan

Strategic plan for PhD Electrical Engineering defines the overall layout of the areas/elements that are included in the program to educate students to master's level. These elements prepare students through theory and research work. These elements are Program Contents, Program Delivery Methodology and Program Output Evaluation.

#### 3.1.4.1 Program Contents

After the completion of 18 credit hours course work in first two semesters, students are required to do research work of 30 credits hours. The research work may be theoretical or experimental.

#### 3.1.4.2 Program Delivery Methodology

Program delivery methodology includes lectures, presentations, tutorials, assignments, and research.

#### 3.1.4.3 Program Output Evaluation

Program output is measured through regular examinations, assignment's results and final thesis results.

## 3.2 Standard 1-2

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

### 3.2.1 Program Outcomes

1. Students shall be able to go for higher education Post Doct. Electrical Engineering.

2. Students shall be able to develop their expertise in computer related software packages.
3. Students will be able to perform technical and non-technical jobs in various fields.
4. Students shall be able to administer Electrical Engineering concepts in various fields.
5. Students shall be able to do research in related fields.
6. Students shall be able to execute tasks in positive and constructive manner.

| **Program Objectives** | **Program Outcomes** | | | | | |
|---|---|---|---|---|---|---|
| | **1** | **2** | **3** | **4** | **5** | **6** |
| 1 | X | | | | | |
| 2 | | x | x | | x | |
| 3 | | | | X | | |
| 4 | | | | | x | x |

**Table2: Outcomes versus Objectives**

## 3.3 Standard 1-3

**The results of Program's assessment and the extent to which they are used to improve the program must be documented.**

The results of the faculty programs' assessment is shown below in graphical charts for courses evaluation and teachers' evaluations.

### 3.3.1 Course Evaluation

Courses evaluation is shown in the following graphical chart:

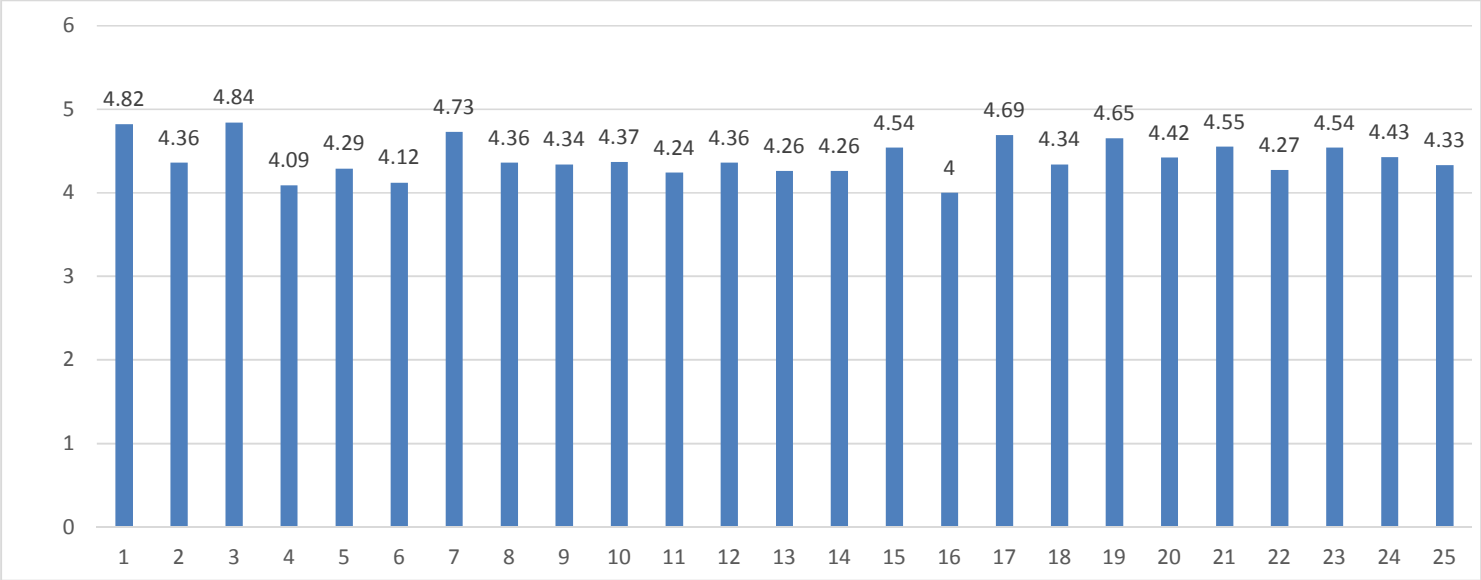


**Figure 1: Course Evaluation Bar Chart**

Through this evaluation, students have graded the courses against the structure, method of teaching, learning outcomes, objectives and practical implementation of theory. The total graded marks are 5.

See Annexure C (Course Evaluation Survey) for sample course evaluation results. The sample shows the results for one course only while same has been done for all courses listed below. The results of all other courses have been kept in a separate file for record purposes. Following is the list of courses that are being evaluated by the students along with their course code and graded scores.

Following is the list of courses that have been evaluated by the students along with their course code and graded scores.

| Sr. No | Course | Marks |
|---|---|---|
| 1 | Digital Communications Theory | 4.82 |
| 2 | Electrical Network Analysis Theory | 4.36 |
| 3 | Antenna and Wave Propagation Theory | 4.84 |
| 4 | Applied Calculus-II | 4.09 |
| 5 | Calculus and Analytical Geometry | 4.29 |
| 6 | Communication Skills | 4.12 |
| 7 | Computer Communication Networks Theory | 4.73 |

| | | |
|---|---|---|
| 8 | Computer Fundamentals Theory | 4.36 |
| 9 | Electric Circuits Theory | 4.34 |
| 10 | Electrical Machines Theory | 4.37 |
| 11 | Electronic Devices Theory | 4.24 |
| 12 | Engineering Economics | 4.36 |
| 13 | Engineering Workshop | 4.26 |
| 14 | FPGA Based System Design Theory | 4.26 |
| 15 | Instrumentation & Measurement Lab | 4.54 |
| 16 | Instrumentation & Measurement Theory | 4 |
| 17 | Ethical Principles & Contemporary Issues | 4.69 |
| 18 | Islamic Studies | 4.34 |
| 19 | Microprocessor Based Systems Lab | 4.65 |
| 20 | Microprocessor Based Systems Theory | 4.42 |
| 21 | Numerical Analysis | 4.55 |
| 22 | Power Electronics Theory | 4.27 |
| 23 | Probability in Engineering | 4.54 |
| 24 | Signals & Systems Theory | 4.43 |
| 25 | Technical Writing and Presentation Skills | 4.33 |

### 3.3.2 Teachers Evaluation

Teacher's evaluation is shown in the following graphical chart:

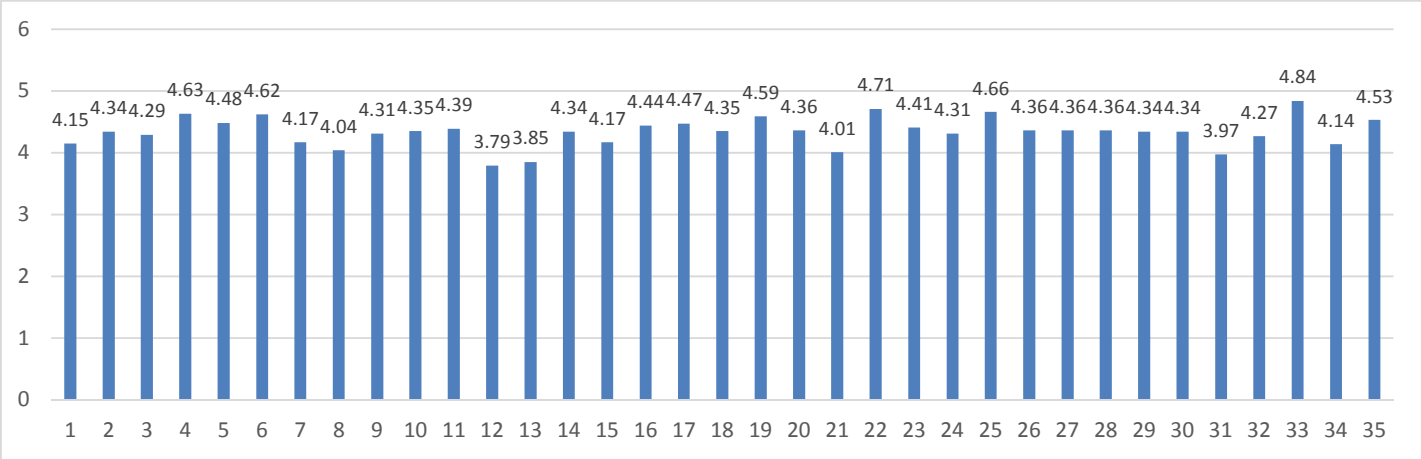


**Figure 2: Teachers Evaluation Graph**

Through this evaluation, students have graded the teachers against lecture preparation, punctuality, general behavior, subject knowledge and teaching method. The total graded marks are 5. See Annexure D (Teachers Evaluation Survey) for sample teacher evaluation results. The sample shows the results for one teacher only while same has been done for all

teachers listed below. The results of all other teachers have been kept in a separate file for record purposes.

Following is the list of teachers that are being evaluated by the students along with the serial number and graded scores.

| Sr. No | Teacher Name | Course Name | Marks |
|---|---|---|---|
| 1 | Awais Bin Wasi | Technical Writing and Presentation Skills | 4.15 |
| 2 | Dr. Kashif Shaikh | Islamic Studies | 4.34 |
| 3 | Ambreen Arshad | Calculus and Analytical Geometry | 4.29 |
| 4 | Col M. Anwar | Digital Communications Theory | 4.63 |
| 5 | Dr. Jameel Ahmed | Signals & Systems Theory | 4.48 |
| 6 | Dr. Kashif | Islamic Ethical Principles & Contemporary Issues | 4.62 |
| 7 | Sohail Khalid | Electric Circuits Theory | 4.17 |
| 8 | Dr. Tassadaq Hussain Tassadaq | Engineering Workshop | 4.04 |
| 9 | Dr. Usman Zabit . | FPGA Based System Design Theory | 4.31 |
| 10 | Dr. Zeeshan Hameed Khan | Electrical Network Analysis Theory | 4.35 |
| 11 | Engr. Adil Zohaib | Electrical Machines Lab | 4.39 |
| 12 | Adil Zohaib | Power Electronics Lab | 3.79 |
| 13 | Engr. Jhanzeb | Applied Calculus-II | 3.85 |
| 14 | Engr. Jhanzeb | Signals & Systems Theory | 4.34 |
| 15 | Farrukh Qureshi | Electronic Devices Theory | 4.17 |
| 16 | Imran Ahmed | Computer Fundamentals Lab | 4.44 |
| 17 | Iram Mushtaq | Engineering Economics | 4.47 |
| 18 | Malik Tariq Awan | Electrical Machines Theory | 4.35 |
| 19 | Moazzam Ul Islam | Electrical Network Analysis Lab | 4.59 |
| 20 | Muhammad Akmal | Microprocessor Based Systems Theory | 4.36 |
| 21 | Muhammad Faisal | Instrumentation & Measurement Theory | 4.01 |
| 22 | Muhammad Faisal | Computer Communication Networks Theory | 4.71 |
| 23 | Muhammad Rizwan | Numerical Analysis | 4.41 |
| 24 | Muhammad Sadiq Orakzai | Power Electronics Theory | 4.31 |
| 25 | Muhammad Sadiq Orakzai | Electric Circuits Theory | 4.66 |
| 26 | Nasir Hussain | Instrumentation & Measurement Lab | 4.36 |
| 27 | Nasir Hussain | Signals & Systems Lab | 4.36 |
| 28 | Saqib Amin | Microprocessor Based Systems Lab | 4.36 |
| 29 | Shaheryar Najam | Computer Fundamentals Theory | 4.34 |
| 30 | Shahzad Hussain | Electronic Devices Lab | 4.34 |
| 31 | Shahzad Hussain | FPGA Based System Design Lab | 3.97 |
| 32 | Shehzad Ahmed | Electric Circuits Lab | 4.27 |
| 33 | Sohail Khalid | Antenna and Wave Propagation Theory | 4.84 |
| 34 | Tariq Anees | Communication Skills | 4.14 |
| 35 | Zohaib Ahmad Khan | Probability in Engineering | 4.53 |

Faculty carried out in house discussion and analyzed the feedback and identified the areas of improvement. A discussion with In charge undergraduate stream was also held. They decided to go through the identified areas in Board of Studies to finalize the

recommendations for improvement to be presented in Board of Faculty and Academic Council.

The Dean and In-charge Program also discussed the teachers' evaluation results and decided to carry out counseling of teacher who is below par. It was also decided to conduct training sessions for teachers who are not performing at expected level.

## 3.4 Standard 1-4

**The department must assess its overall performance periodically using quantifiable measures.**

### 3.4.1 Graduates/Undergraduates enrolled in last two years

21 PhD Electrical Engineering students were enrolled during the sessions 2016-2017 (one & half years).

### 3.4.2 Student Faculty Ratio:

PhD Electrical Engineering has 4-1 ratio.

### 3.4.3 Average GPA per semester:

The average GPA is 3.72.

### 3.4.4 Average Completion time

Average/minimum completion time expected is 3 years.

### 3.4.5 Employer Satisfaction

N/A

### 3.4.6 Students Course Evaluation Average Response Rate

Student's course evaluation average response rate for all courses is 9.

### 3.4.7 Students Faculty Evaluation

QEC staff conducted the teachers' evaluation to ensure unbiased feedback. The feedback was taken on VLE. The results are visible under section 3.3.

### 3.4.8 Research

The program faculty published research papers in different journals list is attached in Annexure E.

### 3.4.9 Students/Teachers Satisfaction

As per HEC defined standard, a ratio of 4:1 for the academic and administrative non-technical staff is maintained by the Faculty of Engineering and Applied Sciences.

Students and teachers satisfaction is judged in different ways. For students this is done by faculty as well as QEC staff by conducting in-class discussions to know students views and through feedback provided by them on HEC Performa number 1 & 10. While, teachers satisfaction is judged using the HEC defined Performa number 5 and their views during in-person discussion with QEC staff.

## 4.0 Criterion 2: Curriculum Design and Organization

### 4.1 Title of Degree Program

PhD Electrical Engineering

### 4.2 Definition of credit hour:

1 credit hour is 1 hour of theory lecture in a week.

### 4.3 Degree plan

**4.3.1** Following is the list of all the approved course to be taught after appropriate selection in each semester for PhD Electrical engineering program.

**4.3.2**

| | | |
|---|---|---|
| EE-600 | Linear Systems | 3 + 0 |
| EE-601 | Stochastic Processes | 3 + 0 |
| EE-602 | Modeling and Simulation of Dynamic Systems | 3 + 0 |
| EE-610 | Advanced Digital Control Systems | 3 + 0 |
| EE-611 | Embedded Control Systems | 3 + 0 |
| EE-612 | Linear Multivariable Systems | 3 + 0 |
| EE-613 | Non-Linear Systems | 3 + 0 |
| EE-614 | Stochastic Estimation and Control | 3 + 0 |
| EE-615 | Adaptive Control | 3 + 0 |
| EE-616 | Optimal Control | 3 + 0 |
| EE-617 | Intelligent Control | 3 + 0 |
| EE-618 | Special Topics in Control | 3 + 0 |
| EE-619 | Robust Control Systems | 3 + 0 |
| EE-620 | Basics of Inertial Navigation | 3 + 0 |

| | | |
|---|---|---|
| EE-621 | Introduction to Navigation Systems | 3 + 0 |
| EE-622 | Integrated Navigation Systems | 3 + 0 |
| EE-623 | Introduction to Guidance & Control of Aerospace Systems | 3 + 0 |
| EE-640 | Advanced Digital Signal Processing | 3 + 0 |
| EE-641 | Wavelets and Transform Methods | 3 + 0 |
| EE-642 | Advanced Digital Image Processing | 3 + 0 |
| EE-643 | Video Signal Processing | 3 + 0 |
| EE-644 | Speech Processing and Coding | 3 + 0 |
| EE-645 | Computer Vision | 3 + 0 |
| EE-646 | Adaptive Signal Processing | 3 + 0 |
| EE-648 | Real-Time and Multi-Rate Systems | 3 + 0 |
| EE-649 | Real-Time System Design and Analysis | 3 + 0 |
| EE-650 | Biomedical Signal Processing | 3 + 0 |
| EE-651 | Neural Systems and Networks | 3 + 0 |
| EE-652 | Detection & Estimation | 3 + 0 |
| EE-660 | Advanced Optoelectronics | 3 + 0 |
| EE-661 | ASIC for Digital Signal Processing | 3 + 0 |
| EE-662 | Advanced Computer Architecture | 3 + 0 |
| EE-663 | Digital System Design and Microprocessor Architecture | 3 + 0 |
| EE-664 | Multi-core System Architecture | 3 + 0 |
| EE-665 | Programming of Multi-core Architectures | 3 + 0 |
| EE-666 | Advanced Microelectronics | 3 + 0 |
| EE-667 | Advanced Digital Design | 3 + 0 |
| EE-668 | Photonic Devices | 3 + 0 |
| EE-669 | Parallel Programming Models | 3 + 0 |
| EE-670 | Introduction to Big Data & Deep Learning in HPC | 3 + 0 |
| EE-671 | Advanced Semiconductor Device Physics | 3 + 0 |
| EE-672 | Special Topics in Digital Communications | 3 + 0 |
| EE-681 | Advanced Digital Communication | 3 + 0 |
| EE-682 | Advanced Mobile & Satellite Communication | 3 + 0 |
| EE-683 | Advanced Telecommunications Networks | 3 + 0 |
| EE-684 | Multimedia Communications | 3 + 0 |
| EE-685 | RF Circuit Theory | 3 + 0 |
| EE-686 | Advanced Computer Networks | 3 + 0 |
| EE-687 | Advanced Antenna Theory | 3 + 0 |
| EE-688 | Secure Communications | 3 + 0 |
| EE-689 | Engineering Operations | 3 + 0 |
| EE-690 | PhD Thesis | 30 |

### 4.4 Standard 2-3

**The Curriculum must satisfy the core requirements for the program as specified by the respective accreditation body.**

PhD Electrical Engineering program satisfies the Minimum Requirements of the respective accreditation body , the Higher Education Commission HEC, (Program Semester Credit Hours):

| Program | Theory Courses | Research Thesis |
|---|---|---|
| PhD Electrical Engineering | 18 | 30 |

### 4.5 Standard 2-4

**The curriculum must satisfy the major requirements for the program as specified by the respective accreditation body.**

Same as Standard 2-3.

### 4.6 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.**

Same as standard 2-3 and Standard 2-1 (table 4.4) as defined above.

### 4.7 Standard 2-6

**Information technology component of the curriculum must be integrated throughout the program**

Not applicable

### 4.8 Standard 2-7

**Oral and written communication skills of the student must be developed and applied in the program.**

Students go through course presentations and research based assignments which develop the oral and written communication skills of the students. Students have to write a thesis and present their work in thesis defense in after qualifying the comprehensive exam.

## 5.0 Criterion 3: Laboratories and Computing Facilities

Riphah has established Research laboratories for students to practice their learning outcomes. Following is the list of available laboratories available to PG students:

The details about these laboratories are provided as follows

| | |
|---|---|
| **Laboratory Title** | **(1 )Computer Lab**<br>**(2) Signals Interfacing Lab** |
| **Location & Area** | FEAS, B-block |
| **Objectives** | Provide students with the facility to carry out their research projects efficiently. |
| **Adequacy for Instruction** | All required instructions are displayed in the lab at appropriate places for use by faculty, students and support staff. |
| **Courses Taught** | Research laboratory |
| **Major Apparatus / Equipment** | **Computer Lab** (30 * Computers, FPGA/DSP kits interfacing availability, Multimedia)<br>**Signal Interfacing Lab**( 14 computers, FPGA/DSP kits interfacing modules) |
| **Safety Regulations** | Safety regulations are being strictly followed. See Annexure I for details of Laboratory Precautions. |

**Table 8: Laboratories Details**

### 5.1 Standard 3-1

**Laboratory manuals/documentation/instructions for experiments must be available and easily accessible to faculty and students.**

Laboratory In-charge is the custodian of all the manuals and instructions concerning his laboratory. Its copies are also available with the Program Coordinator to be used by the faculty and students. These manuals and instructions are issued to desired entity through a defined process and proper record is maintained. The laboratory in-charge keeps the manuals and instructions in laboratory for immediate access to students and faculty members during the laboratory work.

Laboratory equipment and facilities in Faculty of Engineering & Applied Sciences (FEAS) are equally good and comparable to any high reputed university of the country.

### 5.2 Standard 3-2

**There must be support personal for instruction and maintaining the laboratories.**

Each laboratory is authorized by two staff members, and Laboratory Attendant. Laboratory in-charge / HOD is responsible for overall maintenance of laboratory while laboratory Attendant is responsible to maintain the laboratory equipment and general duties within the lab.

### 5.3 Standard 3-3

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

The computing facilities in FEAS are adequate with latest computers & software that support students to fulfill their education requirements. The facilities can be compared with any high reputed university of the country.

Riphah is running a comprehensive Campus Management System. It facilitates the faculty members in maintaining the attendance record, examination schedules, time tables and student's data.

## 6.0 Criterion 4: Student Support and Advising

Since the launch of Riphah in year 2002, all its programs have started and finished on schedule. The culture in Riphah is that teachers and students have facility of frequent interaction, even after classes, for any professional and academic advice. This aspect is

even highlighted and indicated by the students in the feedback on HEC Performa number 10, taken by the Quality Enhancement Cell (QEC) in the university.

### 6.1 Standard 4-1

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

The courses are offered in a logical sequence that grooms the students to obtain the program's defined objectives and outcomes.

### 6.2 Standard 4-2

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

All courses in the program are taught by the single faculty member. Courses are structured in the board of studies before commencement of each semester. Faculty members interact frequently among themselves and with students. Students are encouraged to participate in providing feedback and their views about course contents during and after the classes.

### 6.3 Standard 4-3

**Guidance on how to complete the program must be available to all students and access to qualified advising must be available to make course decisions and career choices.**

Students are informed about the program requirements at the start of the session during orientation week by in-charge program and QEC staff. In-Charge Program acts as advisor to guide students to choose appropriate courses and also provide guidance on different issues. He also maintains a list of guidance points provided to students during the semester and program, which is being evaluated at the end of the program to take necessary improvement.

Program coordinator maintains a list of professional societies and technical bodies, that is provided to students on demand and students can get membership of such organizations on individual basis.

## 7.0 Criterion 5: Process Control

### 7.1 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.**

The program has a well-defined admission criterion, which include evaluation of student's marks at different levels and admission test results. The admission is done twice a year, in spring and fall semester.

Students who have completed the 18 years of education are eligible to appear in the admission test of the program. Admission is granted strictly on the basis of academic record, admission test and interview.

Students from accredited universities are eligible to transfer their credits to RIPHAH. Students have to submit complete course curriculum and internal evaluation certificate of each subject from his/her previous institution duly signed by head of department/principal. Student's applications in this regard are dealt on case to case basis. Such applications are discussed in Board of Studies to evaluate them and make decision. Dean of the faculty is the final authority to make decision regarding credit transfers.

This admission criterion is evaluated every 2 years by the board of faculties and academic council in the light of instructions issued by HEC. Minor internal adjustments regarding admission test result weightages or test contents are made.

## 7.2 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.**

The student's name, after completion of the admission process, is forwarded to the Registrar office for registration in the specific program and the registration number is issued.

Students are evaluated through assignments, sessional, mid-term exams, course presentations and final examinations at the end of each semester. The Research work is started in $3^{rd}/4^{th}$ semester after qualifying the comprehensive exam and contributes significantly towards the student's evaluation for the program. Only qualified students in each semester are allowed to join the next semester.

## 7.3 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.**

Vacant and newly created positions are advertised in the national newspapers, applications are received by the Registrar office, scrutinized by the respective Deans, and call letters are issued to the short-listed candidates on the basis of experience, qualification, publications and other qualities/activities as determined by the University in the light of HEC guidelines.

The candidates are interviewed by the University Selection Board. Selection of candidates is approved by the BOG. Induction of new candidates depends upon the number of approved vacancies. HEC also helps RIPHAH in enrolling the foreign faculty.

Faculty members are retained by giving them good remuneration, favorable teaching environment, research facilities and management support.

On yearly basis faculty performance is evaluated basing on HEC Performa number 10 by the students, Deans recommendations and with the counter signature of vice chancellor and pro chancellor. The annual increment is based on the recommendations of the Dean and the vice chancellor.

## 7.4 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.**

Students are the recipient of the delivery of course material, through their teachers. The program is actively evaluated by Dean, In Charge program and QEC. The feedback of the taught is best instrument to measure that the course learning outcomes are met. The students give feedback on Performa number 1 regarding course contents and how it was delivered. Through Performa number 10, students evaluate and comment on teacher's efforts, put in to deliver the course contents, his general conduct in the class, the environment, he, maintains and extra efforts, he makes to satisfy students, thirst for knowledge.

Faculty feedback is also taken on HEC Performa number 2 (Faculty Course Review Report – (Annexure L)) and Performa number 5 (Faculty Survey – (Annexure-G)) which is a very useful activity to evaluate the course contents, learning and teaching environments and overall teachers satisfaction level. Course evaluation by teachers also indicates what percentage of desired outcome has been achieved by the course contents and what needs to be improved or changed.

This exercise is done once a year. The feedback is discussed with Dean and In-charge program, who focus on making improvements in the weak areas, identified by the students. Teacher's evaluation performs are fed to the computer and bar charts are made. Each teacher is graded out of 5 marks. The comparative bar charts indicate level of performance of teachers, as visualized by the students. QEC formally submits these bar charts to Dean and Vice Chancellor for their information and taking of necessary corrective actions.

## 7.5 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 program is run on semester basis and at the end of each semester examinations are held to evaluate the students progress in that semester. Qualified students are allowed to join next semester. At the end of 3rd semester after qualifying the comprehensive exam all students are required to submit their respective research proposal.
Submission of Thesis is done in 6th semester on average and all the students need to clear their viva voce examination. Student's final results are announced on the basis of viva voce results and examination results.

Requirements of this standard are met through 3 Performas issued by HEC. The feedback is documented and its evaluation indicates degree of satisfaction of the graduates. Three forms (Performa 3, Survey of Graduating Students (Annexure-F), Performs 7, Alumni Survey (Annexure-A) and Performa 8, Employer Survey (Annexure-B)) are extremely good instruments to measure the program outcomes.

The feedback is taken on yearly basis. The suggestions given by the graduating students and graduates working in the industry are given due weightage. For example a few graduates through Alumni survey indicated that communication and proposal writing skills, in program, may be increased. The proposal is being evaluated by Board of Faculty

of Engineering and Applied Sciences and recommendations are being made to Academic Council to grant approval for change in syllabi.

The feedback of employers has been achieved. Generally, they are satisfied; however, they have recommended that graduates be given more practice in business communication and proposal writing skills. This is also being processed to make changes in syllabi.

## 8.0 Criterion 6: Faculty

### 8.1 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 courses, plan, modify and update courses and curricula. All faculty members must have a level of competence that would normally be obtained through graduate work in the discipline. The majority of the faculty must hold a Ph.D. in the discipline.**

| Program Area | Courses in the program area | Number of faculty members | Number of faculty with Ph.D Degree |
|---|---|---|---|
| PhD Electrical Engineering | All the course mentioned in the approved course list | 5 | 5 |
| **Total** | - | 5 | 5 |
| | | | |

**Table 11: Faculty Distribution by Program Area**

### 8.2 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. Effective Programs for Faculty Development**

Faculty concurrency in the discipline is determined based on the criterion set by the University in the light of HEC guidelines. All faculty members submit their professional resumes on HEC Performa number 9 (Faculty Resume, Annexure-H) once a year. This information is compared with the existing criterion set by university for the concurrency of the post.

All full time faculty members are allocated teaching hours as per HEC defined limit which enables the faculty to have enough spare time to perform scholarly activities and improve their knowledge and skills.

Faculty members are provided with adequate resources for research and academic activities. Every faculty members has been provided with computer system and access to internet. Faculty members have also access to library materials for academic and research activities. Professional training is also provided to faculty if required to enhance their capabilities.

University has defined the development programs for faculty members under the arrangement of RARE (Riphah Academy of Research and Education). RARE holds frequent interactive sessions of junior and senior faculty to discuss teaching methodology with a view to train the young faculty members. This practice is done on yearly basis during the summer vacations. After every 2 year the development program is analyzed in Deans Council for its effectiveness and necessary improvements.

The university encourages the faculty to participate in research activities by providing them sufficient financial support within or outside university.

## 8.3 Standard 6-3

**All faculty members should be motivated and have job satisfaction to excel in their profession.**

Faculty members are motivated through public appreciation and documented appreciation (annual performance evaluation report) by the In-Charge Program and Dean on regular basis.

The faculty survey of the program using HEC Performa number 5 indicates the mix reactions of the faculty, which indicates that teaching load be distributed evenly and more relaxed environment be generated. Cumulative results of faculty surveys are attached in Annexure G.

## Criterion 7: Institutional Facilities

### 8.4 Standard 7-1

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

The university has provided e-learning facilities to faculty members and students. Each faculty member has a computer system with access to internet and e-learning library section.

Students have been provided a number of computer systems in the library to access e-learning section. Every student has been provided with user ID to access the e-learning resources from within the university library. The university library is linked with foreign universities libraries through internet.

The support staff to look after the e-learning resources is sufficient in number, trained and responsive. The university has provided enough funding to support the e-learning.

### 8.5 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.**

The university library has enough program related technical books in hard copies to support the program learning. The internet access to the external universities libraries provides

opportunities to the students and faculty to obtain knowledge from their technical resources.

The library is staffed with more than 8 professionals to help students and faculty members to get access to required book or learning material efficiently.

### 8.6 Standard 7-3

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

Enough class rooms are available to run the program as per desired schedule. In few class rooms, there is a need of up-gradation of multimedia and other resources. The work orders have been initiated and procurement process is in progress.

## 9.0 Criterion 8: Institutional Support

### 9.1 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.**

University allocates enough financial resources each year to hire competent faculty as required.

As already listed in standard 5-3, Faculty members are retained by giving them good remuneration, favorable teaching environment, research facilities and management support.

As listed in standard 6-2, Faculty members are provided with adequate resources for research and academic activities to maintain their competence. Every faculty members has been provided with computer system and access to internet. Faculty members have also access to library materials for academic and research activities. Professional training is also provided to faculty if required to enhance their capabilities.

## 9.2 Standard 8-2

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

The university follows the guidelines of HEC for admission in this program. The number of graduate students enrolled in PhD Electrical Engineering during the last 1.5 years is 21 in which 6 students are the Faculty members of FEAS enrolled on Assistantship policy of FEAS , with no research assistants in the faculty.

Faculty to graduate student's ratio for the last one & half years remained in the range of 5:1.

## 9.3 Standard 8-3

**Financial resources must be provided to acquire and maintain Library holdings, laboratories and computing facilities.**

Library at RIPHAH holds more than 30000 books for all programs. Sufficient number of computers is available to be used by the students. Library is organized to accommodate 100 students (male, female) in research cubicles as well as in the common places. Separate common rooms for male and female students are available with internet facility.

Laboratories at RIPHAH holds adequate equipment to be used by the students to carry out desired experiments and laboratory work. Each year a handful of budget is allocated for laboratories to maintain and upgrade the equipment and other facilities.

Computing facilities at RIPHAH provide excellent platform to students to enhance their learning capabilities. There are 2 computing laboratories in FEAS, the Computer Lab & Signals Interfacing lab for graduate students. Besides it there are two computing laboratories in the faculty of computing which are accessible to all students for their use.

## 9.4 Conclusion

The self-assessment report of PhD (Electrical Engg-FEAS), Riphah International University, I-14 Campus Islamabad is an important document, which gives strengths and

weaknesses of the program. The management is striving hard to improve infrastructure for establishment of conducive environments for studies. The faculty is focused on imparting quality education, introduction of new and innovative techniques and conduct of quality research to produce competent engineers. The report has been prepared after evaluating the program in the light of 8 criterion and 31 standards given in HEC's Self-Assessment Manual. The program mission objectives and outcomes are assessed and strategic plans are presented to achieve the goal, which are again measurable through definite standards. Students surveys revealed variable results with regards to knowledge, interpersonal skills, management and leadership skill. Weaknesses are identified which are related to space, laboratories and equipment. Improvements in curriculum design and infrastructure are suggested which are based upon set, well defined and approved criteria. Examinations are held on schedules, academic schemes are prepared well in advance, transparent admission, registration and recruiting policy, excellent student teacher ratio are some of the strong areas of this program. The number of courses along with titles and credit hours for each semester, course contents for degree program, is thoroughly planned. Their efficacy was measured through different standards and it was found to be satisfactory.

The facilities and shortcomings in the laboratory have been discussed. It was concluded that laboratory facilities and class rooms need further improvement. The need of refresher courses for the fresh faculty on method of teaching cannot be over emphasized.

Proper steps are taken to guide the students for program requirements, communication, meetings, tutorial system, tours, students-teacher interaction etc. Some improvements have been suggested. As regards the process control covering admission, registration, recruiting policy, courses and delivery of material, academic requirements, performance and grading, university, as well as Higher Education Commission have set forth proper rules, which are properly followed.

Institutional facilities were measured through Criterion 3; infrastructure, library, class room and faculty offices and in each case, short comings and limitation are highlighted.

Institutional facilities need to be strengthened. Accordingly, institutional support will greatly promote and strengthen academic, research, management and leadership capabilities.

In conclusion, the strong and weak areas of the program are as under:-

## 9.5 PhD Electrical Engineering Program Strong and Weak Points

PhD Electrical Engineering program is designed to educate students to meet the challenges of the modern world and present market needs. During the execution of the program several observations were made that can be categorized as strong and weak points of the program. These points are listed below:

**PhD Electrical Engineering Program Strong Points:**

a. Research paper based degree

b. Excellent Students-Teacher Ratio

c. Experienced & qualified faculty

d. A very powerful and expanded international library

e. Assistantship policy for the junior faculty members seeking admission in the PhD program.

f. Syllabus Strategy, development and organization are based upon set, well defined and approved criteria

g. Pre-requisites fully observed

h. Examinations on schedule.

i. Academic Schemes fully prepared in advance

j. The number of courses along with their titles and credit hours for each semester, course contents for degree program are fully planned

k. HEC rules fully followed

**PhD Electrical Engineering program Weak Points:**

- No space for research lab
- Need research lab equipment

- Need to improve Canteen facility for faculty and students.
- Need to improve the research papers published by students/faculty.
- Need to improve the scholarship policy for the graduate students seeking admission in the PhD program.

## 9.6 Significant Future Development Plans

Significant future development plan for the program includes rectification of weaknesses and improvement in overall performance of the program. As per agreed views, lack of learning resources will be rectified by the induction of more learning material including books, CDs and related magazines and journals in the library. The research lab will be extended to accommodate maximum number of students. Sufficient funds will be allocated to buy laboratory equipment. On the basis of self-assessment, faculty management has decided to look into the improvement areas for course syllabi in the light of observations listed in section 3.1.5, that would help achieve program objectives more efficiently.

Significant future development plans for the program are categorized as short and long term arrangements which are as under:

a. Short term arrangements include improvement in the availability of research journals of international repute in library. Prepare handouts, brochures and pamphlets for advisory services.

   While the long term arrangements include procurement of high value items like multimedia, additional air conditioners, improvement in sound systems and up gradation of lab equipment. On the academic side, the future development plans for the programs include training programs for junior faculty members to enhance their teaching capabilities, revision of course syllabi and overall enhancement of knowledge and skills of all faculty members in relation to the latest global advancements in communication engineering through exchange program, short trainings and collaborative research projects within and outside Pakistan.

**Annexure- A:** **Employer Survey**

Not Applicable – No Graduate

**Annexure**- B: **Alumni Survey**

Not Applicable – No Graduate

**Annexure C:** **Students Course Evaluation**

**1. (1) The course objectives were clear.**

- 5: 6 (54.55 %)
- 4: 3 (27.27 %)
- 3: 2 (18.18 %)
- 2: 0
- 1: 0

**2. (2) The course workload was manageable**

- 5: 5 (45.45 %)
- 4: 3 (27.27 %)
- 3: 3 (27.27 %)
- 2: 0
- 1: 0

**3. (3) The length of the course was appropriate**

- 5: 6 (54.55 %)
- 4: 4 (36.36 %)
- 3: 1 (9.09 %)
- 2: 0
- 1: 0

**4. (4) Teaching methods encouraged participation**

- 5: 5 (45.45 %)
- 4: 4 (36.36 %)
- 3: 2 (18.18 %)
- 2: 0
- 1: 0

**5. (5) The Teacher strictly follows the goals and objectives of the course.**

- 5: 4 (36.36 %)
- 4: 5 (45.45 %)

- 3: 2 (18.18 %)
- 2: 0
- 1: 0

**6. (6) Learning materials (lesson plans, Course notes etc) were relevant and useful.**

- 5: 4 (36.36 %)
- 4: 5 (45.45 %)
- 3: 2 (18.18 %)
- 2: 0
- 1: 0

**7. (7) Recommended reading books etc were relevant and appropriate**

- 5: 4 (36.36 %)
- 4: 5 (45.45 %)
- 3: 2 (18.18 %)
- 2: 0
- 1: 0

**8. (8) I understood all the lectures**

- 5: 5 (45.45 %)
- 4: 5 (45.45 %)
- 3: 1 (9.09 %)
- 2: 0
- 1: 0

**9. (9) The pace of the course was appropriate**

- 5: 4 (36.36 %)
- 4: 3 (27.27 %)
- 3: 4 (36.36 %)
- 2: 0
- 1: 0

**10. (10) The methods of assessments were fair**

- 5: 5 (45.45 %)
- 4: 2 (18.18 %)
- 3: 3 (27.27 %)
- 2: 1 (9.09 %)
- 1: 0

**11. (11) As a result of taking this course my interest and curiosity about the issues and questions in this subject area has grown**

- 5: 5 (45.45 %)
- 4: 4 (36.36 %)
- 3: 2 (18.18 %)

- 2: 0
- 1: 0

**12. (12) As a result of taking this course my thinking is more focused and systematic, at least in this subject area.**

- 5: 4 (36.36 %)
- 4: 2 (18.18 %)
- 3: 5 (45.45 %)
- 2: 0
- 1: 0

**13. (13) The material in the practical was useful (if applicable)**

- 5: 4 (36.36 %)
- 4: 3 (27.27 %)
- 3: 4 (36.36 %)
- 2: 0
- 1: 0

**14. (14) In this course, I improved my ability to give sound reasons regarding issues in this subject area**

- 5: 4 (36.36 %)
- 4: 4 (36.36 %)
- 3: 3 (27.27 %)
- 2: 0
- 1: 0

**Annexure D:** **Students Teacher Evaluation**

**Teacher:** **Dr. Usman Zabit**

**2. (1) The Teacher starts and finishes class on time**

- 5: 7 (63.64 %)
- 4: 3 (27.27 %)
- 3: 1 (9.09 %)
- 2: 0
- 1: 0

**3. (2) The Teacher comes duly prepared for the lecture in each class**

- 5: 6 (54.55 %)
- 4: 4 (36.36 %)
- 3: 1 (9.09 %)
- 2: 0
- 1: 0

**4. (3) The Teacher utilizes full time of class focusing on the subject matter**

- 5: 7 (63.64 %)
- 4: 2 (18.18 %)
- 3: 2 (18.18 %)
- 2: 0
- 1: 0

**5. (4) The Teacher demonstrates knowledge of the subject**

- 5: 7 (63.64 %)
- 4: 2 (18.18 %)
- 3: 2 (18.18 %)
- 2: 0
- 1: 0

**6. (5) The Teacher has covered the whole course**

- 5: 4 (36.36 %)
- 4: 5 (45.45 %)
- 3: 2 (18.18 %)
- 2: 0
- 1: 0

**7. (6) The Teacher is available for after class consultations during the specified office hours.**

- 5: 6 (54.55 %)
- 4: 3 (27.27 %)
- 3: 2 (18.18 %)

- 2: 0
- 1: 0

**8. (7) The Teacher provides additional material/books/internet references apart from the text book**

- 5: 7 (63.64 %)
- 4: 3 (27.27 %)
- 3: 1 (9.09 %)
- 2: 0
- 1: 0

**9. (8) The Teacher communicates the subject matter clearly and effectively**

- 5: 7 (63.64 %)
- 4: 2 (18.18 %)
- 3: 2 (18.18 %)
- 2: 0
- 1: 0

**10. (9) The Teacher maintains a conducive environment in the class**

- 5: 7 (63.64 %)
- 4: 2 (18.18 %)
- 3: 2 (18.18 %)
- 2: 0
- 1: 0

**11. (10) The Teacher shows respect towards students and encourages class participation**

- 5: 8 (72.73 %)
- 4: 1 (9.09 %)
- 3: 2 (18.18 %)
- 2: 0
- 1: 0

**12. (11) The Teacher ensures equitable participation of the students in the class**

- 5: 6 (54.55 %)
- 4: 3 (27.27 %)
- 3: 2 (18.18 %)
- 2: 0
- 1: 0

**13. (12) The Teacher is fair in exams and grading**

- 5: 5 (45.45 %)
- 4: 4 (36.36 %)
- 3: 2 (18.18 %)
- 2: 0

- 1: 0

**14. (13) The Teacher checks and returns assignments/exams and scripts, in time**

- 5: 6 (54.55 %)
- 4: 3 (27.27 %)
- 3: 2 (18.18 %)
- 2: 0
- 1: 0

**15. (14) The Teacher relates current lesson content to previous and future lessons**

- 5: 6 (54.55 %)
- 4: 3 (27.27 %)
- 3: 2 (18.18 %)
- 2: 0
- 1: 0

**16. (15) The teacher takes extra steps to elevate competency level of weak students**

- 5: 4 (36.36 %)
- 4: 5 (45.45 %)
- 3: 2 (18.18 %)
- 2: 0
- 1: 0

**17. (16) The Teacher accepts and incorporates student's ideas, questions and responses.**

- 5: 3 (27.27 %)
- 4: 4 (36.36 %)
- 3: 3 (27.27 %)
- 2: 1 (9.09 %)
- 1: 0

**18. (17) The Teacher make use of audio/visual aids to make the lectures interesting**

- 5: 5 (45.45 %)
- 4: 2 (18.18 %)
- 3: 3 (27.27 %)
- 2: 1 (9.09 %)
- 1: 0

**19. (18) The Teacher uses easy and understandable vocabulary for students**

- 5: 3 (27.27 %)
- 4: 5 (45.45 %)
- 3: 3 (27.27 %)
- 2: 0
- 1: 0

**20. (19) During the teaching, the teacher display the enthusiasm towards the subject and teaching -motivation to subject interest**

- 5: 7 (63.64 %)
- 4: 2 (18.18 %)
- 3: 2 (18.18 %)
- 2: 0
- 1: 0

**21. (20) The teacher is using VLE/Moelim for academic activities (assignments/quizes/notes)**

- 5: 5 (45.45 %)
- 4: 3 (27.27 %)
- 3: 2 (18.18 %)
- 2: 0
- 1: 1 (9.09 %)

## Annexure – E: Research Papers List

**(1)Dr.Jameel Ahmed (Journals &Conference Papers)**

1. Saadat Hanif Dar, Jameel Ahmed "Wearable textile antenna design in body-centric wireless communications: A Systematic literature review" Biomedical Research, 2017, 28(8)

2. Saadat Dar, Jameel Ahmed "Performance Analysis of wearable patch antenna on flannel substare" Journal of bio based material and bio energy, 2017 (Accepted) (JCR IF:0.65)

3. Ishfaq H, Ayaz Ahmad, M Y Qadri, Jameel Ahmed, N Qadri, "Ant Colony Optimization for Multicore Re-configurable Architecture" Artificial Intelligence (AI) Communications Journal, IOS Press, 2017 (Paper Accepted). (IF 0.364)

4. Adeel Ahmed, Jameel Ahmed, M Yasir Qadri, *"Fuzzy Logic Based Adaptive MPSoC for Balanced Energy and Throughput"* Kuwait Journal of Science (Paper Accepted), 2016.

Saadat Hanif Dar, Jameel Ahmed "Characterizations of flexible wearable antenna based on rubber substrate" International Journal of Advanced Computer Science and Applications (IJCSIT) ,Vol.7,No.11, 2016, Pp 190-195

7. Menna Nawaz, Jameel A, M Y Siyal, "*Performance Analysis of ACQUIRE, Considering Timeliness Monitoring*" in Proceedings of 10th International Conference on Information, Communications and Signal Processing (ICICS 2015), December 2-4, 2015, Singapore.

8. Iqtadar Hussain, Jameel Ahmed, Azkar Hussain, "An image encryption technique based on coupled map lattice and one-time S-Boxes based on complex chaotic system," *Journal of Intellgnet & Fuzzy Systems*, vol. Preprint, no. Preprint, pp. 1-8, 2015 DOI: 10.3233/IFS-151628, IOS Press Inc. USA (IF 1.812).

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12. Fadia Sohail, Jameel Ahmed, Zeeshan Habib, " PKI Based Cryptographic Module," In proceedings, IEEE 17th INMIC 2014 Conference, Pp. 87-91, December 8-10, 2014, Karachi-Pakistan.

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14. Jameel A, Menna Nawaz, Umar Mujahid, "RFID System: Design Parameters and Security Issues", *World Applied Sciences Journal*, Volume 23(2), pp. 236-244, 2013, ISSN 1818-4952.

15. Jameel A, *et al.* "Spectral Estimation for Smart Antenna Systems," *In Proceedings, IEEE 3rd IEEE International Conference on Computer, Control & Communication (IEEE-IC4),* September 25-26, 2013, PNEC-NUST, Pakistan.

16. Hammad Naeem, Asim Anees, Jameel Ahmed, "Sapwood Oak Classification Using Global and Local Features," *International Journal of Computer Sciences Issues*, Volume 10, Issue 4, 2013

17. Umar Mujahid, Jameel Ahmed, "Cryptanalysis of Ultralightweight RFID Authentication Protocol," International Cryptology e-print Archive, 2013/385.

18. Hammd Naeem, Maria Minhas, Jameel Ahmed, "A Comparative Study About Object Classification Based On Global and Local Features," International Journal of Computer Science Issues, Volume 10, Issue 4, July 2013.

19. Jameel Ahmed, Saadat Dar "Multi-Homing Enabled cognitive radio based Inter-Vehicle Communication systems" International Journal of Computer Science & Information Technology (IJCS&IT) Vol 4,No.6, Dec 2012 Pp 77-95

20. Jameel A, Hammad Naeem, "Converge Path Planning for Automated Inspection of Known Path Environment," *Asian Journal of Engineering Science & Technology* (AJEST), ISSN 2077-1142, Vol. 2 Issue 1, March 2012.

21. M Zubair, Umar Mujahid, Najamul Islam, Jameel A, "Cryptanalysis of RFID Ultra-lightweight Protocols and Comparison between its Solution Approaches" ISSN: 1999-4974, BUJICT Journal, volume-5, issue-1, Pp. 56-61, December 2012.

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## Dr. Usman Zabit (HOD Electrical Engineering)

***'W' CATEGORY JOURNAL PAPERS***

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6. U. Zabit, O. D. Bernal, and T. Bosch, "Design and analysis of an embedded accelerometer coupled self-mixing laser displacement sensor", *IEEE Sensors Journal*, vol.13, no.6, pp.2200-2207, (2013). **(IF: 1.889)**
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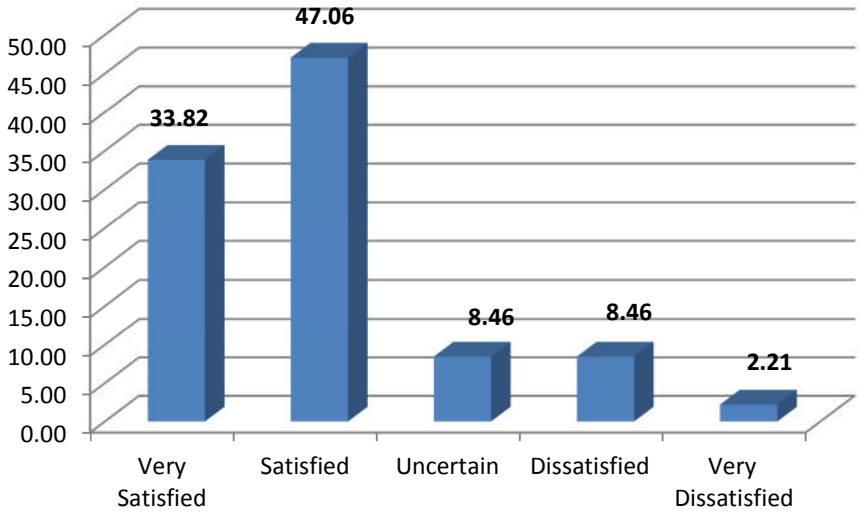
## Annexure – F: Survey of Graduating Students

Not applicable

## Annexure – G: Faculty Survey

| No. | | Questions | Percentages | | | | |
|---|---|---|---|---|---|---|---|
| | | | Very Satisfied | Satisfied | Uncertain | Dissatisfied | Very Dissatisfied |
| 1 | - | Clarity of institution's goals/mission | 56.25 | 43.75 | 0.00 | 0.00 | 0.00 |
| 2 | - | Communications from/with peers and faculty/departmental leadership | 37.50 | 56.25 | 6.25 | 0.00 | 0.00 |
| 3 | - | Type of teaching/ research you currently do | 43.75 | 56.25 | 0.00 | 0.00 | 0.00 |
| 4 | - | Your interaction with students in and outside classroom | 68.75 | 31.25 | 0.00 | 0.00 | 0.00 |
| 5 | - | Your satisfaction level regarding office and IT facilities available to you. | 25.00 | 56.25 | 6.25 | 12.50 | 0.00 |
| 6 | - | The mentoring available to you from seniors | 50.00 | 37.50 | 6.25 | 6.25 | 0.00 |
| 7 | - | Administrative support from the faculty/department. | 37.50 | 37.50 | 6.25 | 12.50 | 6.25 |
| 8 | - | Clarity and Satisfaction about the faculty promotion process. | 12.50 | 31.25 | 25.00 | 18.75 | 12.50 |
| 9 | - | Your prospects for advancement and progress through ranks. | 12.50 | 43.75 | 31.25 | 12.50 | 0.00 |
| 10 | - | Salary and compensation package. | 12.50 | 37.50 | 18.75 | 25.00 | 6.25 |
| 11 | - | Job security and stability at the faculty/department/university. | 18.75 | 37.50 | 31.25 | 12.50 | 0.00 |
| 12 | - | Amount of time you have for yourself and family. | 18.75 | 68.75 | 6.25 | 0.00 | 6.25 |
| 13 | - | The overall environment in the department. | 43.75 | 56.25 | 0.00 | 0.00 | 0.00 |
| 14 | - | Adequacy of technological & multimedia instructional resources in classrooms | 25.00 | 68.75 | 0.00 | 6.25 | 0.00 |
| 15 | | Whether the department is utilizing your experience and knowledge. | 50.00 | 43.75 | 0.00 | 6.25 | 0.00 |
| 16 | | Recognition/appreciation of good teaching by seniors | 37.50 | 43.75 | 0.00 | 12.50 | 6.25 |
| 17 | | Opportunities for research in your discipline and recognition of research accomplishment | 25.00 | 50.00 | 6.25 | 18.75 | 0.00 |
| | | **Faculty Average** | **33.82** | **47.06** | **8.46** | **8.46** | **2.21** |

**Note: To find the satisfaction percentage, *'Very Satisfied'* and *'Satisfied'* percentages are combined together. Similarly, *'Dissatisfied'* and *'Very Dissatisfied'* percentages are also combined.**


47.06
33.82
8.46
8.46
2.21
50.00
45.00
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Very Satisfied
Satisfied
Uncertain
Dissatisfied
Very Dissatisfied

**Annexure – H** **Faculty Resume**

| Sr # | Name | Designation | Qualification | Institute |
|---|---|---|---|---|
| 1 | Dr.Jameel Ahmed | Dean & Professor | (1)Post Doc. (Telecom Engineering)<br>(2)PhD (Telecom Engineering), | (1)NTU, Singapore<br>(2)HU Pak & NTU, Singapore. |
| 2 | Dr. Usman Zabit | HOD Electrical Engineering | (1)Post-Doc.Electrical Engg.)<br>(2) PhD Electrical Engg. | INP ,Toulouse,<br>France |
| 3 | Dr. Zeeshan H Khan | Assistant Professor | PhD Control System Engineering | University of Grenoble, France |
| 4 | Dr.Sohail Khalid | Assistant Professor | PhD Electrical & Electronics Engg. | Universiti Teknologi PETRONAS Malaysia |
| 5 | Dr.Tassadaq HUSSAIN | Assistant Professor | PhD (Computer Architecture ) | Universitat Politècnica : BarcelonaTech |

## Annexure – I Lab Safety Precautions

- Be calm and relaxed, while working in Lab.
- When working with voltages over 40 V or with currents over 10 A, there must be at least two people in the Lab at all times
- Oscilloscopes are among the most expensive instruments in the lab. Be careful when working with one.
- Make sure the multi-meter is set to proper mode for the measurement being made. Never put in current mode for any other measurement.
- Apply low voltages or low power to check proper functionality of circuits
- No loose wires or metal pieces should be lying on table or near the circuit, to cause shorts and sparking.
- Avoid using long wires, that may get in your way while making adjustments or changing leads.
- Keep high voltage parts and connections out of the way from accidental touching and from any contacts to test equipment or any parts, connected to other voltage levels.
- When working with inductive circuits, reduce voltages or currents to near zero before switching open the circuits.
- BE AWARE of bracelets, rings, metal watch bands, and loose necklace (if you are wearing any of them), they conduct electricity and can cause burns. Do not wear them near an energized circuit.

**Annexure –J**

# AT Findings

# Panel - Assessment Team

Following Assessment Team Members Visited FEAS on 14 March, 2017

- **Engr. Rafat Ullah Khan** **Chairman**
- **Prof. Dr. Khurram Shahzad** **Member**
- **Dr. Rizwan Bin Faiz** **Member**

# Exit Meeting - 14 March, 2017

Following attended the meeting:-

- **Prof. Dr. Anis Ahmad** **Vice Chancellor**
- **Prof. Dr. Jameel Ahmed** **Dean FEAS**
- **Engr. Rafat Ullah Khan** **Chairman**
- **Dr. Khurram Shahzad** **Member**
- **Dr. Rizwan Bin Faiz** **Member**
- **Engr. Salim Ahmed Khan** **Member**

The Chairman AT presented his final recommendations to carry out the improvements in this program. The Respected VC approved the proceedings:

- Inadequate space in the research lab for students
- Need to improve the computer facilities to all the research students
- Need to improve canteen facility for faculty and students

**Note:** After the above exit meeting, the Departmental head prepared the implementation plan with target dates and submitted it to the QEC. The QEC pursued the activities and then mentioned the final status completed/in progress in Annex-K before submitting the SAR to HEC

**Annexure – K**

# Implementation Plan (Summary) – FEAS (PhD-Electrical Engineering) – I-14 Campus

| AT Finding | Corrective Action | Implementation Date | Responsibility | Present Status |
|---|---|---|---|---|
| Inadequate space in the research lab for students | 4x workstations for students be installed in the research Lab | 10th May, 2017 | Registrar/Administrator I-14 | **Completed** |
| Need to improve the computer facilities to all the research students | 10x additional computer sets are required in Labs | 10th May, 2017 | Dean FEAS/ Head ITIC /Procurement | **Completed** |
| Need to improve canteen facility for faculty and students | Review the current status of I-14 Canteen Facility to upgrade | 2nd May 2017 | Administrator I-14 | **Completed** |
| AT Chairman's Comments Name and Signature | | | Registrar Riphah International University Sector I-14, Islamabad | |
| Dean's Comments Name and Signature | | | | |
| QEC Comments Name and Signature | Timely Completion | | | |

**Annexure – L Faculty Course Review Report**

Faculty of Engineering and Applied Sciences (FEAS) is running multiple courses for PhD Electrical Engineering program. All courses curriculum is reviewed periodically by the faculty to assess its effectiveness and contribution in achieving program objectives. Course review also contributes towards making any changes in the syllabi and enhancements required in areas identified as a result of Alumni Survey, Employer Survey and Graduating Students Feedback.

PT members launched HEC Performa 2 (Faculty of Course Review Report) to all the faculty members, to obtain their feedback about courses.

The summary of the overall feedback of all courses identified the following improvement points:

a. Provision to interact more with industrial units during study period
b. Provision of more technical resources to execute final projects
c. Syllabi review to improve communication skills.
d. Change in course curriculum to emphasis on design component.
e. Improvement in technical report writing skills

Board of Studies scrutinized these points and presented in the Board of Faculty that will review and suggest the implementation as deemed necessary.

**Annexure – M** **Rubric Report**

| Self Assessment Report | | | | | |
|---|---|---|---|---|---|
| **Criterion 1 – Program Mission, Objectives and Outcomes** | **Weight = 0.05** | | | | |
| **Factors** | **Score** | | | | |
| **1. Does the program have document 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)** | **23** | | | | |
| **SCORE 1 (S1) = [TV/ (No. of Question * 5)] * 100 * 0.05** | **3.83** | | | | |

| **Criterion 2– Curriculum Design and Organization** | **Weight = 0.20** | | | | |
|---|---|---|---|---|---|
| **Factors** | **Score** | | | | |
| **1. Is the curriculum consistent?** | **5** | **4** | **3** | **2** | **1** |
| **2. Does the curriculum support the program's documented objectives?** | **5** | **4** | **3** | **2** | **1** |
| **3. Are the 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 PEC?** | **5** | **4** | **3** | **2** | **1** |
| **5. Does the curriculum satisfy the major requirements laid down by HEC and the PEC?** | **5** | **4** | **3** | **2** | **1** |
| **6. Does the curriculum satisfy the professional requirements as laid down by PEC?** | **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)** | **38** | | | | |
| **SCORE 1 (S1) = [TV/ (No. of Question * 5)] * 100 * 0.20** | **17.5** | | | | |

| **Criterion 3– Laboratories and Computing Facilities** | **Weight = 0.10** | | | | |
|---|---|---|---|---|---|
| **Factors** | **Score** | | | | |
| **1. Are the 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's objectives?** | **5** | **4** | **3** | **2** | **1** |
| **Total Encircled Value (TV)** | **15** | | | | |
| **SCORE 1 (S1) = [TV/ (No. of Question * 5)] * 100 * 0.10** | **10** | | | | |

| **Criterion 4– Student Support and Advising** | **Weight = 0.10** | | | | |
|---|---|---|---|---|---|
| **Factors** | **Score** | | | | |
| **1. Are the courses being offered in sufficient frequency nd 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)** | **12** | | | | |
| **SCORE 1 (S1) = [TV/ (No. of Question * 5)] * 100 * 0.10** | **8** | | | | |

| **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 ad documented?** | **5** | **4** | **3** | **2** | **1** |
| **6. Are the process for faculty evaluation & promotion consistent with the institution mission?** | **5** | **4** | **3** | **2** | **1** |
| **7. Are the process 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 based 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)** | **51** | | | | |
| **SCORE 1 (S1) = [TV/ (No. of Question * 5)] * 100 * 0.15** | **13.91** | | | | |

| 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 interest of faculty members sufficient to teach all courses, plan, modifies and updates courses and curricula? | **5** | 4 | 3 | 2 | 1 |
| 3. Do the faculty members possess 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 Ph.D. 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) | **26** | | | | |
| SCORE 1 (S1) = [TV/ (No. of Question * 5)] * 100 * 0.15 | **18.57** | | | | |

| 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 adequate 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) | **11** | | | | |
| SCORE 1 (S1) = [TV/ (No. of Question * 5)] * 100 * 0.15 | **10.99** | | | | |

| Criterion 8– Institutional Support | Weight = 0.10 | | | | |
|---|---|---|---|---|---|
| **Factors** | **Score** | | | | |
| 1. Is there sufficient support and finances to attract and retain high quality faulty? | 5 | **4** | 3 | 2 | 1 |
| 2. Are there an adequate number of high quality graduate students, teaching assistants and Ph.D. students? | 5 | 4 | **3** | 2 | 1 |
| Total Encircled Value (TV) | **7** | | | | |
| SCORE 1 (S1) = [TV/ (No. of Question * 5)] * 100 * 0.10 | **7** | | | | |

Overall Assessment Score = S1+S2+S3+S4+S5+S6+S7+S8
= 3.83+17.5+10+8+13.91+18.57+10.99+7
= 89.80