Self Assessment Report
DEPARTMENT OF PLANT PATHOLOGY
October, 2012 - October, 2014
M.Sc (HONS)

Prepared by:
1. Prof. Dr Tariq Mukhtar  Coordinator
2. M. Usman RAJA Member
3. Dr.Gulshan Irshad Member
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Introduction

Plant Pathology as a major discipline was introduced in the B.Sc. (Hons) program in 1986. The Department of Plant Pathology, however, has been offering two supporting/ minor courses since the inception of the Barani Agricultural College in 1979. The college was upgraded to University of Arid Agriculture in the later year of 1994. Since then, its growth and progress both in terms of faculty, students and up-gradation have been remarkable. It has produced well-known Plant Pathologists, who are serving at national and international level in different capacities.

The overall program objectives were to familiarize the agricultural graduates with the importance of plant pathogens, diseases and disturbances caused by these pathogens and microbes and to make them learn the techniques to manage these pathogens. Moreover, to prepare the highly skilled and professionally sound graduates who can understand the pathological problems, forecast the upcoming plant disease epidemics and be able to take decisions for managing the disease so that it may not cause the economic losses to the farmers. Its curriculum highlights the emerging issues of new and economically important plant diseases in the area. The disease management has been given substantial importance in the curriculum. The department is committed in quality teaching to augment the professional skill of the students in plant protection so that they can keep with the pace of requirements of rapidly increasing population. Keeping in view its commitment the department updates its curriculum regularly to meet the future challenges. For the enhancement of students’ professional training and career opportunities the department provides a variety of study programs such as Mycology, Bacteriology, Virology, Nematology, Epidemiology and Disease management. Department also give a facility to farmers by arranging a frequent tours of the farmers’ fields for in situ disease diagnosis. The faculty has a large number research projects in which some are internationally collaborated and funded.

This Self Assessment Report (SAR) presents the progress of Department at under graduate level, for the academic years 2012-2014. Surveys were conducted at the end of each semester i.e., fall semester (2012-2013), spring (2013), fall semester (2013-2014). This Self Assessment Report (SAR) is based on eight criteria. The first criterion provides the program mission and objectives followed by criterion 2 that gives an insight in to the curriculum development. Criterion 3 catalogues the laboratories and other relevant information. The information about students'
support and advising is mentioned in the fourth criterion whereas the last four criteria give the information about process control, faculty characteristics and institutional facilities and support.
Criterion 1: Program Mission, Objectives and Outcomes

Certain standards have to be met to meet the above mentioned criterion of the self assessment. This section describes how the standards of the Criterion 1 are achieved.

Standard 1-1: The program must have documented measurable objectives that support institution mission statements

Mission Statement

There are several microorganisms such as, bacteria, fungi, protozoa, and nematodes which cause diseases and reduce the growth of plants qualitatively and quantitatively. About 18% of crop yield is lost due to plant diseases in every year worldwide. Controlling plant disease necessitates the use of millions of kilograms of pesticides for treating seeds, fumigating soil, spraying plants or the post harvest treatments of fruits. Such control measures has not only beneficial aspects but also has some limitations by causing environmental pollution, change the biodiversity and microbes resistance against the pesticides. A task for plant pathology is to reduce food losses while improving food quality, and protect our environment. In current scenario the world population continues to increase and on the other hand cultivated land, natural resources and our environment continue to decrease, polluted and stressed. It is necessisory for every one to do some work for controlling plant diseases effectively and safely. Therefore, the mission of programme of Plant Pathology is to deliver quality education, carry out superior research and spread knowledge for the improvement of agriculture, environment, to make sure self-sufficiency in quality food by decreasing quantitative as well as qualitative losses in crop production due to diseases. The stress is given at early disease diagnosis, forecasting and finding environmental friendly means for controlling plant diseases to develop a sustainable and substantially profitable production system so as to make the future of Pakistan radiant.

Documented measurable objectives

Strategic objectives of the programme of Plant Pathology are:

1. To develop the discipline on up-to-date, creative and innovative lines for teaching and research for the graduate students.
2. To introduce the various fields of Plant Pathology viz. virology, bacteriology, mycology, nematology, disease diagnosis, pathogen detection and characterization, disease epidemiology and management.

3. To guide the students how to select, plan and prepare the research project on diseases of economic and national importance in the area.

4. To strengthen the discipline with amalgam of advanced knowledge and approaches of related subjects such as Molecular Plant Pathology.

5. To predict new and emerging problems in the field through *in vivo* and *in vitro* plant disease diagnosis understanding.

6. To incorporate the culture of research in teaching faculty and students.

**Main elements of strategic plan to achieve mission and objectives**

- Development of a well teaching system based on the experience and vision gathered from world reviews, literature, innovations, events, symposia etc for the award of degrees.
- Designing and constantly updating the curriculum involving major and elective subjects, specialized areas, internship programs and study tours.
- Preparation of under-graduate research projects and research reports.
- Established of well equipped specialized research laboratories depending on the available resources.
- Publication of scientific papers, books, manuals and bulletins etc.
- Planning and application of research projects funded by the universities and other agencies.
- Develop a relationship with national and international research organizations to encourage research.
The assessment of program objectives through different criteria is presented in Table 1

Table 1 Program Objectives and their Assessment

<table>
<thead>
<tr>
<th>S. #</th>
<th>Objective</th>
<th>How Measured</th>
<th>When Measured</th>
<th>Improvement Identified</th>
<th>Improvement made</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>To improve the field of plant pathology at aaur</td>
<td>On the basis of introduction, importance &amp; impact of plant diseases in the area</td>
<td>On the basis Continuous activity</td>
<td>Teaching skill need to be improved</td>
<td>Modification and improvement in teaching methods like use of multimedia, posters</td>
</tr>
<tr>
<td>2</td>
<td>To give the educational and applied information to the undergraduate</td>
<td>Basic information and status of knowledge of students through entry tests and students feed back</td>
<td>At the time of admission or semester</td>
<td>Some basic courses need to be included in the curriculum</td>
<td>Modification of curriculum as per requirement</td>
</tr>
<tr>
<td>3</td>
<td>To help out the students in research/internship</td>
<td>students feed back</td>
<td>Before start of research/internship</td>
<td>Students to make presentations and reports</td>
<td>Presentations, seminars, communication skills development</td>
</tr>
<tr>
<td>4</td>
<td>Assimilation of related fields</td>
<td>Through entry tests, interviews research interests</td>
<td>Subject/courses attachment before start</td>
<td>Related subjects to be recommended for studies</td>
<td>Development of knowledge and vision through web based technologies</td>
</tr>
<tr>
<td>5</td>
<td>Expectation of new teaching/research able areas</td>
<td>Through surveys, monitoring of diseases and identity of priority problems</td>
<td>Continuous activity</td>
<td>New courses to be included in curriculum, research on new problems</td>
<td>Approval of new curriculum</td>
</tr>
<tr>
<td>6</td>
<td>To encourage the students in academics and research in Plant Pathology</td>
<td>No. of research publications, research projects submitted &amp; completed; evaluation by students and efficiency in disease diagnosis</td>
<td>During the whole academic year</td>
<td>Use of advanced techniques in disease monitoring and evaluation; interaction between farmers and scientists; maintenance of pathogen cultures</td>
<td>Research papers published in reputed journals; approval of projects; application of new immunological &amp; DNA-based techniques</td>
</tr>
</tbody>
</table>
Standard 1-2: The program must have documented outcomes for graduating students. It must be documented that the outcomes support the program objectives and that graduating students are capable of performing these outcomes.

Expected Outcomes of the Program

All the students in Plant Pathology should possess the ability of: Identification of priority problems and their solution.

1. Communication through class presentations, oral discussions, writing review articles etc.
2. Research projects preparation based upon identification of problems and use of new analytical techniques; such as immunological, molecular, DNA-based techniques and nano-technology.
3. Enhancement of knowledge and broadening of vision.
4. Publishing research in reputed journals

A number of surveys based on the QAA questionnaires were conducted to assess the program outcomes/graduates of the Department.

Table 2 shows that outcomes of the programme are aligned with each objective

Table 2: Programme outcomes and their relationship with objectives

<table>
<thead>
<tr>
<th>Outcomes</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>+</td>
<td>++</td>
<td>++</td>
<td>+</td>
<td>+</td>
<td>++</td>
</tr>
<tr>
<td>2</td>
<td>+++</td>
<td>+++</td>
<td>++</td>
<td>+</td>
<td>++</td>
<td>++</td>
</tr>
<tr>
<td>3</td>
<td>++</td>
<td>++</td>
<td>+</td>
<td>+++</td>
<td>++</td>
<td>+++</td>
</tr>
<tr>
<td>4</td>
<td>++</td>
<td>++</td>
<td>+</td>
<td>++</td>
<td>++</td>
<td>++</td>
</tr>
</tbody>
</table>

+ = Satisfactory
++ = moderately satisfactory
+++ = Highly satisfactory
Program Assessment Results

Teachers’ Evaluation

Assessment was conducted twice during each academic year 2012 – 14 at the end of each semester: Fall.Semesters 2012- 2013 and 2013 - 2014 and spring semesters 2013 and 2014. Seven teachers Dr. Abdul Rauf, Dr. Abid Riaz, Dr. M. Inam-ul-Haq, Dr. Tariq Mukhtar, Dr. Farah NAz, Dr. Muhammad Ashfaq and Ms. Gulshan Irshad numbered as 1-7 were evaluated by the students in accordance with Proforma-10. The cumulative result of fall semesters 2012-13 & 2013-14 is presented graphically in Fig. 1 and of Spring 2013 & 2014 in Fig. 2. The overall compiled results showed that the performance of teachers was satisfactory. It is obvious from the graph that Teacher-6 is on the top scoring 97% followed by teacher 3, 7 and 4 respectively (Fig. 1). Whereas in spring semesters, the overall performance of all the teachers was graded as very good and rated more than 80%. Teacher 6, however, was on top with 98% and 97% scoring followed by teacher 3, 7 and 4 (Fig. 2).
Fig.1 Teacher Evaluation For post Graduate Courses (Fall 2012-13 & 2013-14)

Fig.2 Teacher Evaluation For post Graduate Courses (spring, 2013 & 14)

Detail of individual performance of each teacher is obvious from the graphically given ahead.
Graphically Showing Evaluation of Teachers in Detail

Teacher 1 (PP-701):

Graph show that the students were satisfied with the teacher regarding all the querries. However, about 9% students show their reservations that the teacher was fair in the examination. Majority of the students were of the view that the teacher was prepared for the lecture.

General Comments of the Students about this Teacher

Weakness:
- Teacher should include modern concepts in the lectures.

Strengths:
- Teacher was good in behavior.
**Teacher 1 (PP 713)**
It is evident from these following graphs; overall performance of the teacher rated by the student is excellent.

![Graph showing student feedback](image)

**General Comments of the Students about this Teacher**

**Teachers Evaluation (Proforma 10)**

**Strengths:**
- Teacher delivered his lectures in very easy and simple way.
- Teacher encourages class participation.

**Teacher: 2 (PP-717)**
The survey results presented below showed that all the students were found agreed with all queries of the survey and teacher’s performance remained very good in the course regarding all parameters.
General Comments of the Students about this Teacher

**Teachers Evaluation (Proforma 10)**

**Weaknesses:**
- Teacher should arrange field visits and study tours to learn more practically.

**Strengths:**
- Teacher was guiding.
Teacher 3 (PP-703)

It is evident from the pie charts that the performance of the teacher was rated as good by the students regarding the completion, punctuality and knowledge demonstration by the teacher. The teacher showed respect to the students and was rated as fair in examination.

Teacher Evaluation Graph

Strengths:
- Teacher was friendly.

Teacher: 4 (PP-704)

Graph showed that the performance of the teacher was very good. Generally, all the indicators are categorized as strongly agreed and agreed.
General Comment of Students about this Teacher

Teachers Evaluation (Proforma 10)

Strengths:
➢ Teacher was cooperative.
➢ Teacher was nice and humble.

Teacher: 4 (PP 714)
The survey results exhibited very good performance of the teacher. All the parameters were rated as strongly agreed and agreed by the respondents.

General Comment of Students about this Teacher

Teachers Evaluation (Proforma 10)

Strengths:
➢ Teacher was cooperative.
➢ Teacher was nice and humble.

Teacher: 5 (PP- 701)
Survey results indicated that almost all agreed that the teacher was prepared for the class. Likewise they were also agreed that the teacher provides additional material apart from the text and the teacher used to give them citation regarding current situations with reference to Pakistani context. The responses of the remaining questions are also similar.
General Comments of Students about this Teacher

Teachers Evaluation (Proforma 10)

Weaknesses:

➢ Teacher should provide notes on time.

Strengths:

➢ Teacher has good command on the subject.

Teacher: 6 (PP-706)

It is obvious from the pie charts that all the parameters are categorized as strongly agreed and agreed by all the students. The teacher's performance was excellent. Almost all students were agreed that the teacher demonstrates knowledge of the subject; Teacher completed the whole course, the teacher used to communicate the subject matter effectively etc.
General Comments of the Students about this Teacher

Strengths:
Teacher completed the course within time.
Teacher was nice.

Student Course Evaluation

The courses of the respective teachers were also evaluated as per Proforma1 (Annexure-1) twice during each academic year 2012-13 and 2013-14 at the end of each semester: Fall. semesters (October, 2012- February, 2013) and (October, 2013- February, 2014), Spring semesters (March, 2013- August, 2014). The results are shown in Fig-3. and 4. Eleven courses were taught altogether during the two semesters. In Fall semester PP-701, PP-706, PP-719, PP-714, PP-717 and PP-703 in spring semester PP-704, PP-713, PP-709, PP-707 and PP-719 were taught by seven teachers (Dr. Abdul Rauf, Dr.Abid Riaz, Dr. M. Inam-ul-Haq, Dr. usman, Dr. Tariq Mukhtar, Dr. Farah NAz, Dr. Muhammad Ashfaq and Ms.Gulshan Irshad) numbered 1-7. It is clear from the figure 3 that during fall semester the course taught by the teacher 5 are on the top securing 4.67 points and the course of Teacher 3 is on second number, securing 4.52 points. The course taught by teacher 2 was ranked at the bottom securing 3.87 points. In the spring semester the course taught by the teacher 5 is again on the top securing 4.92 points and the course taught by teacher 2 was ranked at the bottom securing 4.01 points (Fig.4). The overall performance of all the courses was however can be ranked as of high-quality. The scores of other courses of respective teachers can be seen from the Pie chart.

![Pie chart showing course evaluation]

Figure: 3Performance level for each course offered in Plant Pathology in Fall Semesters during 2012-13 & 2013-14
Figure: 4 the performance level for each Plant Pathology courses offered in Spring Semesters 2013 & 2014

PP-701: Teacher 1
Most of the respondents strongly agreed with the statement that course objectives were clear and course work was manageable. Participation of the students was adequate. Almost 75% reported that they have made progress in this course. About 29% disagreed regarding the provision of learning in the library was good.
PP-717 Teacher 2

It is evident from the following pie charts that overall performance of the teacher was very good. Only 6% students revealed that the teacher did not give them additional material other than text. Regularity punctually, only 6% students did not agree that the teacher leave on time. Likewise 5% of the respondents did not agree that the teacher arrives on time.
7. The instructor shows respect towards students and encourages class participation.

8. The instructor maintains an environment that is conducive to learning.

9. The instructor arrives on time.

10. The instructor leaves on time.

11. The instructor is fair in examinations.

12. The instructor returns graded scripts etc. in a reasonable amount of time.

13. The instructor was available during the specified office hours and for office class consultations.

15. The subject matter presented in the course has increased your knowledge of the subject.
PP-703 Teacher 3
According to the diagram overall performance of the teacher was good.
7. The instructor shows respect towards students and encourages class participation.

8. The instructor maintains an environment that is conducive to learning.

9. The instructor arrives on time.

10. The instructor leaves on time.

11. The instructor is fair in examination.

12. The instructor returns the graded scripts etc. in a reasonable amount of time.

13. The instructor was available during the specified office hours and for after-class consultations.

14. The subject matter presented in the course has increased your knowledge of the subject.

15. The subject matter presented in the course has increased your knowledge of the subject.

A, 71.4

SA, 64.3
The following graphs have shown that performance of the teacher rated by the students is good. The teacher is punctual, shows respects to the students, give additional material for learning and possesses current knowledge.

PP-704 Teacher 4
7 The instructor shows respect towards students and encourages class participation

8 The instructor maintains an environment that is conducive to learning

9 The instructor arrives on time

10 The instructor leaves on time

11 The instructor is fair in examination

12 The instructor returns the graded exams etc. in a reasonable amount of time

13 The instructor was available during the specified office hours and for after class consultations

15 The subject matter presented in the course has increased your knowledge of the subject
PP-701 Teacher 5
According to this graph 70-80% students were strongly agreed on statement like clarity of course objectives, course loads was manageable and data showed 20% trend as agreed about the rest of the queries asked. Less than 10% expressed their views as uncertain or disagreed.

PP-706 Teacher 6
According to this graph 60-80% students were strongly agreed on statement while 15-30% trend as agreed about the rest of the queries asked. Few expressed their views as
uncertain disagreed.
Alumni Survey Results

Many students after doing BSc. Hons. degree join research institutions, public or private sector organization. Proforma 7 (Annexure-VII) was sent to the heads of organizations for their feedback about our graduates in their organizations. The overall results of program assessment by the Alumni are presented in Fig-5.

**Fig.5 Results of the Alumni Survey Proforma**

<table>
<thead>
<tr>
<th>S.D = Strongly Disagree</th>
<th>S.A = Strongly agreed</th>
</tr>
</thead>
<tbody>
<tr>
<td>A = Agreed</td>
<td>D = Disagree</td>
</tr>
<tr>
<td>U.C = Uncertain</td>
<td></td>
</tr>
</tbody>
</table>

It is evident from the pie chart that about 45.40% heads of the organizations strongly agreed whereas 28.30% were agreed that the knowledge of the students was up to date. While about 20% were uncertain about the knowledge of the students. The chart regarding communications skills showed that 60.50% of our students were excellent where as 29% possessed good communication skill. Excellent interpersonal skill was shown by 31% students and 40.42% were graded as very good. However, 10% of our
students were graded poor as for as interpersonal skill is concerned. It is evident from the pie chart that 700% of our students possess excellent and very good management/leadership skills.

**Skills and Capabilities Reflected in Performance as Plant Pathologists**

Students are trained in a way that they develop ability to apply knowledge of plant pathology as professionals. They can exploit their confidence level and communication skills effectively in writing, discussion, use of modern tools, techniques and skills for their profession to formulate and design the experiments/project and to work effectively in a team, to manage disease problems and exploit their abilities to recognize future needs.
Survey of Graduating Students

Results of survey of graduating students based on Proforma 3 (Annexure III) are given in Fig- 5. The graduating students in last semester were surveyed before the award of degree. More than 60% students showed their satisfaction regarding all the parameters on average, whereas 20% of the students surveyed were highly satisfied regarding all information asked. The results of graduating students are summarized and given in Fig. 6.

Fig. 6: Survey of Graduating Students

Best Aspects of the Programme

1. Highly qualified faculty
2. Induction of national professors through the higher education commission
3. Helping attitude of the chairperson for all students in research and extra curricular activities
4. Timely advice
5. Phytodocotor forum
Weeknesses:

1. Laboratories are not well equipped and research facilities such as ELISA, PCR etc are not available
2. Lecture rooms are not enough to take classes and some times teachers have to take classes in the laboratory where research students are working (UV/autoclave is on)

Affectivity of Internship Experience

The internship experience was found effective in enhancing, ability to work in team, independent thinking, appreciation of ethical values, professional development, time management skills, judgment and discipline Fig- 7.
**Standard 1-3: The results of Program’s assessment and the extent to which they are used to improve the program must be documented.**

**Strength of the Department**

The main strength of the department is the availability of all expertise viz. Mycology, Bacteriology, Nematology, Virology, Epidemiology and Disease management, with full acquaintance of their respective subjects, having vast knowledge of local agriculture production systems and disease problems. Two of our faculty members did post doctorate from the world renowned universities and equipped themselves with latest techniques in their respective fields of specialization. Most of the faculty members have local degrees and are experts in their fields. Their work has been published in national and international Journals. They have also implemented national research projects and are highly conscious about the upcoming problems in the field of plant pathology. They are trying to highlight these problems through the survey of the farmers fields so that the undergraduate students can pick up these problems in their post graduate research. One National Professors namely Dr. S.M. Mughal and one subject specialist Dr. Kishwar Sultana from Higher Education Commission (HEC) specialized in their subjects were also contributing their best in the department (Table 5).

**Weaknesses Identified in the Program**

Advanced research is still handicapped due to lack of important equipment as ELISA Reader, plate washer, homogenizers, PCR equipment and ultracentrifuge also mentioned in the Latest literature and reviews are hardly available. There is a need for short term foreign training to young faculty members. Green-house and animal-house facilities are also lacking. Lecture rooms, common rooms, post-graduate laboratories, library and survey / field diagnostic aids are also lacking. The students’ work indicates that there is some opportunity for improving communication skills and the focusing on the practical aspects.

This is the first assessment report; the department is looking forward to see the implementation of the measures.
Standard 1-4: The department must assess its overall performance periodically using quantifiable measures.

Performance of the faculty members pertaining to research activities indicates that there are 257 research papers and 62 other publications and 12 projects in the credit of faculty members of the plant pathology department (Table-03).

**Table 3 Present Performance Measures for Research Activities**

<table>
<thead>
<tr>
<th>Faculty</th>
<th>Publications</th>
<th>Projects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr. Abdul Rauf</td>
<td>10</td>
<td>3</td>
</tr>
<tr>
<td>Dr Inam ul Haq</td>
<td>03</td>
<td>3</td>
</tr>
<tr>
<td>Dr. Tariq Mukhtar</td>
<td>24</td>
<td>1</td>
</tr>
<tr>
<td>Dr. Abid Riaz</td>
<td>12</td>
<td>1</td>
</tr>
<tr>
<td>Mr. Usman Raja</td>
<td>04</td>
<td>0</td>
</tr>
<tr>
<td>Ms. Gulshan Irshad</td>
<td>08</td>
<td>0</td>
</tr>
<tr>
<td>Dr. Muhammad Ashfaq</td>
<td>12</td>
<td>1</td>
</tr>
<tr>
<td>Dr. Farah Naz</td>
<td>09</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>82</strong></td>
<td><strong>10</strong></td>
</tr>
</tbody>
</table>

**Major Future Improvement Plans**

- To impart quality education in Plant Pathology through audio visual aids and modern tools along with provision of latest literature, journals, books, reviews and access to internet.
- To extend facilities for plant disease diagnosis, herbarium, museum, culture bank and develop extension material.
- To prepare hand-outs, brochures and pamphlets for the farmers and advisory services
- To equip the post-graduate laboratories (Mycology, Nematology, Bacteriology and Virology) with the modern and sophisticated equipments stated above.
• Human Resource development in Plant Pathology to meet future challenges for sustainable agriculture leading to self sufficiency in food
• To emphasize problem oriented research on specific diseases prevalent in the arid ecology.
• Overall enhancement of knowledge and skills of faculty members in relation to the latest global advancements in this discipline through exchange programs, short training and collaborative research projects within and outside Pakistan.

Community Services Provided by the Department
The department is providing following community services:
• Advisory services to the farmers as and when desired.
• Advisory services to protected farming in tunnels.
• Advisory services on disease diagnosis and management to provincial agriculture department (local).
• Guidance and supervision of students of various departments.
• Supervision of students on internship in various organizations in the Punjab.

Evaluation of the Administrative Services Offered by the Department
• The department maintains a ratio of 4:1 for the academic (technical) and administrative non-technical staff which fulfils the standard set by the HEC (Table 6).
• Administrative meetings (departmental, university, academic council, and syndicate) are attended as and when required. Generally two meetings of academic council are held per month. Board of studies of the department meets quarterly.
• Quick office disposal; no complaint pertaining to delay has ever received from authorities.
• Proper record of individual students, their theses etc. are maintained.
Students are reasonably happy about the administrative services provided by the department as shown from the graduating student's survey.
Table 4 Quantitative Assessment of the Department at undergraduate level (Last two years)

<table>
<thead>
<tr>
<th>Sr. #</th>
<th>Particular</th>
<th>No.</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Undergraduates (M.sc Hons.) produced</td>
<td>34</td>
<td>95% of them joined M.Sc, 5% did not continue their education.</td>
</tr>
<tr>
<td>ii</td>
<td>Students: Faculty ratio</td>
<td>12:1</td>
<td></td>
</tr>
<tr>
<td>iii</td>
<td>Technical : Non Technical ratio</td>
<td>4:1</td>
<td></td>
</tr>
<tr>
<td>iv</td>
<td>Average grade point</td>
<td>3</td>
<td>Fulfils HEC criteria</td>
</tr>
</tbody>
</table>

The evaluation process indicated high efficiency of system and satisfactory impact of outcomes. Almost all the graduate and post graduates got jobs in various organizations (provincial department, universities, research organizations, banks and private firms).

**Employer Survey**

A survey was conducted to get the employer’s point of view about the working of our former students in their organizations (Proforma 8). Feed back about 25 employees was obtained from organizations viz. National Agriculture Research Centre Islamabad (NARC), Pir Mehr Ali Shah Arid Agriculture University Rawalpindi, Federal Seed Certification Department, Islamabad, Bahaud Din Zakria University Multan and Department of Agricultural Extension Punjab. Their views are reflected in the graphically show. The major emphasis was to know the employers comments on the quality of education regarding: knowledge, communication skill, work skill and interpersonal skill these students have. Survey reflects that our graduates fall above average in all areas and their skill levels revealed more than 72% (Fig-6). This indicates that these graduates are adaptable in show their best potential in any given environment. Some employers gave general comments about some weaknesses in the practical workability. The employers in this survey however, appreciated the practical skills shown by some of our students.
Fig. 8 Employer survey for the determination of students skill level %
**Faculty Course Review Report**

For completion by the course instructor and transmission to Head of Department of his/her nominee (Dept. Quality Officer) together with copies of the Course Syllabus outline

<table>
<thead>
<tr>
<th>Department:</th>
<th>Plant Pathology</th>
<th>Faculty:</th>
<th>FC &amp; FS</th>
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</thead>
<tbody>
<tr>
<td>Course Code:</td>
<td>PP- 717</td>
<td>Title:</td>
<td>Introduction to plant pathology</td>
</tr>
<tr>
<td>Session:</td>
<td>2013-2014</td>
<td>Semester:</td>
<td>Autumn</td>
</tr>
<tr>
<td>Credit Value:</td>
<td>3(2-2)</td>
<td>Level:</td>
<td></td>
</tr>
<tr>
<td>Name of Course Instructor:</td>
<td>Dr. Abid Riaz</td>
<td>No. of Students:</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Contact Hours:</td>
<td>03</td>
</tr>
<tr>
<td>Assessment Methods:</td>
<td></td>
<td>Lectures</td>
<td></td>
</tr>
<tr>
<td>give precise details (no &amp; length of assignments, exams, weightings etc)</td>
<td></td>
<td>Seminars</td>
<td></td>
</tr>
</tbody>
</table>

| Assessment Methods: | Midterm | 12 marks (only theory) | Final Theory | 24 |
| | Practical | 20 |
| | Assignment | 04 |
| Total: | 60 |

**Distribution of Grade/Marks and other Outcomes:** (adopt the grading system as required)

<table>
<thead>
<tr>
<th>Undergraduate</th>
<th>Originally Registered</th>
<th>%Grade A</th>
<th>%Grade B</th>
<th>%Grade C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>No Grade</th>
<th>Withdrawal</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of Students</td>
<td>18</td>
<td>46.5%</td>
<td>33.6%</td>
<td>13.4%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-</td>
<td>18</td>
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</tbody>
</table>

**Overview/Evaluation (Course Co-ordinator’s Comments)**

Feedback: first summarize, and then comment on feedback received from:
(These boxes will expand as you type in your answer.)

4) Student (Course Evaluation) Questionnaires (Proforma-1) Informative course contains basic things

2) External Examiners or Moderators (if any)
--- nil
3) Student /staff Consultative Committee (SSCC) or equivalent, (if any – nil

4) Curriculum: comment on the continuing appropriateness of the Course curriculum in relation to the intended learning outcomes (course objectives) and its compliance with the HEC Approved / Revised National Curriculum Guidelines

Should be essential before taking pathology as major. Yes complies with HEC.

5) Assessment: comment on the continuing effectiveness of method(s) of assessment in relation to the intended learning outcomes (Course objectives)

6) Effective method and should be continued

7) Enhancement: comment on the implementation of changes proposed in earlier Faculty Course Review Reports:

Not received.

Faculty Course Review Report

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</thead>
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<tr>
<td>Course Code:</td>
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<td>Title:</td>
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<td>Session:</td>
<td>2013-2014</td>
<td>Semester:</td>
<td>Autumn</td>
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<tr>
<td>Credit Value:</td>
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<td>Level:</td>
<td></td>
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<tr>
<td>Name of Course</td>
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<td></td>
<td></td>
<td>Lectures</td>
<td>Other (Please State)</td>
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</tbody>
</table>
Instructor:  
Contact Hours: 03  
Seminars

Assessment Methods:  
give precise details (no & length of assignments, exams, weightings etc)  
Midterm  
Final Theory  
Practical  
Assignment  
Total:  
12 marks (only theory)  
24  
20  
04  
60

Distribution of Grade/Marks and other Outcomes: (adopt the grading system as required)

<table>
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<tr>
<th>Undergraduate</th>
<th>Originally Registered</th>
<th>%Grade A</th>
<th>%Grade B</th>
<th>%Grade C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>No Grade</th>
<th>Withdrawal</th>
<th>Total</th>
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<tbody>
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<td>54.7%</td>
<td>18.1%</td>
<td>18.5%</td>
<td>-</td>
<td>9.0</td>
<td>9%</td>
<td>-</td>
<td>11</td>
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Overview/Evaluation (Course Co-coordinator’s Comments)
Feedback: first summarize, then comment on feedback received from:  
(These boxes will expand as you type in your answer.)

1) Student (Course Evaluation) Questionnaires(Proforma-1)  
Informative course contains basic things

2) External Examiners or Moderators (if any)  
--Nil

3) Student /staff Consultative Committee (SSCC) or equivalent, (if any)  
--nil

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<td>Session:</td>
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<td>Semester:</td>
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<td>Credit Value:</td>
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<td>Name of Course Instructor:</td>
<td>Dr.Muhammad Ashfaq</td>
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<tr>
<td>Assessment Methods:</td>
<td>give precise details (no &amp; length of assignments, exams, weightings etc)</td>
<td>Midterm</td>
<td>12 marks (only theory)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Final Theory</td>
<td>24</td>
</tr>
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<td></td>
<td></td>
<td>Practical</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Assignment</td>
<td>04</td>
</tr>
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<td></td>
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Distribution of Grade/Marks and other Outcomes: (adopt the grading system as required)
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<th>% Grade B</th>
<th>% Grade C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>No Grade</th>
<th>With Drawal</th>
<th>Total</th>
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</thead>
<tbody>
<tr>
<td>No. of Students</td>
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<td>17.65%</td>
<td>44.18%</td>
<td>29.41%</td>
<td>5.88%</td>
<td>5.88%</td>
<td>-</td>
<td></td>
<td>17</td>
<td></td>
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</tbody>
</table>

**Overview/Evaluation (Course Co-coordinator’s Comments)**
Feedback: first summarize, and then comment on feedback received from:
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Informative course contains basic things

b. External Examiners or Moderators (if any)
-- Nil

---

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<tr>
<td>Session:</td>
<td>2013-2014</td>
<td>Semester:</td>
<td>Autumn</td>
</tr>
<tr>
<td>Credit Value:</td>
<td>3(2-2)</td>
<td>Level:</td>
<td>Prerequisites:</td>
</tr>
<tr>
<td>Name of Course Instructor:</td>
<td>Dr. Abid Riaz</td>
<td>No. of Students: 18</td>
<td>Lectures</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Contact Hours: 03</td>
<td>Other (Please State)</td>
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<td></td>
<td></td>
<td></td>
<td>Seminars</td>
</tr>
<tr>
<td>Assessment Methods: give precise details (no &amp; length of assignments, exams, weightings etc)</td>
<td>Midterm 12 marks (only theory)</td>
<td>Final Theory 24</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Practical 20</td>
<td>Assignment 04</td>
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Distribution of Grade/Marks and other Outcomes: (adopt the grading system as required)

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<th>%Grade A</th>
<th>%Grade B</th>
<th>%Grade C</th>
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<th>E</th>
<th>F</th>
<th>No Grade</th>
<th>Withdrawal</th>
<th>Total</th>
</tr>
</thead>
<tbody>
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<td>No. of Students</td>
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<td>17%</td>
<td>5.7%</td>
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<td>-</td>
<td></td>
<td>18</td>
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</table>

Overview/Evaluation (Course Co-coordinator’s Comments)
Feedback: first summarize, and then comment on feedback received from:
(These boxes will expand as you type in your answer.)

4) Student (Course Evaluation) Questionnaires (Proforma-1) Informative course contains basic things

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<tbody>
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<td>Advances in plant pathology</td>
</tr>
<tr>
<td>Session:</td>
<td>2013-2014</td>
<td>Semester:</td>
<td>Autumn</td>
</tr>
<tr>
<td>Credit Value:</td>
<td>3(2-2)</td>
<td>Level:</td>
<td>Prerequisites:</td>
</tr>
<tr>
<td>Name of Course Instructor:</td>
<td>Dr. Muhammad Ashfaq</td>
<td>No. of Students:04</td>
<td>Lectures</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Contact Hours:03</td>
<td>Seminars</td>
</tr>
<tr>
<td>Assessment Methods:</td>
<td>Midterm</td>
<td>12 marks (only theory)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Final Theory</td>
<td>24</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Practical</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Assignment</td>
<td>04</td>
<td></td>
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<td></td>
<td>Total:</td>
<td>60</td>
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Distribution of Grade/Marks and other Outcomes: (adopt the grading system as required)

<table>
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<th>%Grade B</th>
<th>%Grad e C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>No Grade</th>
<th>With drawal</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of Students</td>
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<td>52.7%</td>
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<td></td>
<td></td>
<td></td>
<td>-</td>
<td>04</td>
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</table>

Overview/Evaluation (Course Co-coordinator’s Comments)
Feedback: first summarize, and then comment on feedback received from: (These boxes will expand as you type in your answer.)

a. Student (Course Evaluation) Questionnaires (Proforma-1)
Informative course contains basichings
b. External Examiners or Moderators (if any)
--Nil

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<td>Semester:</td>
<td>Autumn [ ] Spring [ ] Summer [ ]</td>
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<tr>
<td>Credit Value:</td>
<td>3(2-2)</td>
<td>Level:</td>
<td>Prerequisites:</td>
</tr>
<tr>
<td>Name of Course Instructor:</td>
<td>Dr. Tariq mukhtar</td>
<td>No. of Students:17</td>
<td>Lectures</td>
</tr>
<tr>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>Seminars</td>
</tr>
<tr>
<td>Assessment Methods:</td>
<td>Midterm</td>
<td>12 marks (only theory)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Final Theory</td>
<td>24</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Practical</td>
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<td></td>
<td>Total:</td>
<td>60</td>
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Distribution of Grade/Marks and other Outcomes: (adopt the grading system as required)

<table>
<thead>
<tr>
<th>Undergraduate</th>
<th>Originally Registered</th>
<th>%Grade A</th>
<th>%Grade B</th>
<th>%Grade C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>No Grade</th>
<th>With withdrawal</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of Students</td>
<td>17</td>
<td>20.4%</td>
<td>44.18%</td>
<td>22.41%</td>
<td>5.88</td>
<td>2.88</td>
<td>-</td>
<td>17</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Overview/Evaluation (Course Co-coordinator’s Comments)
Feedback: first summarize, and then comment on feedback received from:
(These boxes will expand as you type in your answer.)
a. Student (Course Evaluation) Questionnaires (Proforma-1)
Informative course contains basic things

b. External Examiners or Moderators (if any)
--Nil

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<td>Session:</td>
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<td>Semester:</td>
<td>Autumn</td>
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<td>Credit Value:</td>
<td>3(2-2)</td>
<td>Level:</td>
<td>Prerequisites:</td>
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<td>Dr. Tariq mukhtar</td>
<td>No. of Students:15</td>
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<td>Lectures</td>
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<td></td>
<td></td>
<td></td>
<td>Other (Please State)</td>
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<td></td>
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<td>Seminars</td>
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<tr>
<td>Assessment Methods:</td>
<td>give precise details (no &amp; length of assignments, exams, weightings etc)</td>
<td>Midterm</td>
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Distribution of Grade/Marks and other Outcomes: (adopt the grading system as required)

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<tr>
<th>Undergraduate Registered</th>
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<th>%Grade B</th>
<th>%Grade C</th>
<th>D</th>
<th>E</th>
<th>F</th>
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<th>Total</th>
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<tbody>
<tr>
<td>No. of Students</td>
<td>15</td>
<td>46.7%</td>
<td>23.18%</td>
<td>15.41%</td>
<td>2.88%</td>
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<td>15</td>
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</table>
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<table>
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</tr>
</thead>
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<td></td>
<td>Informative course contains basic things</td>
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<table>
<thead>
<tr>
<th>b.</th>
<th>External Examiners or Moderators (if any)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>--Nil</td>
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<td>Title:</td>
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<tr>
<td>Session:</td>
<td>2013-2014</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Semester:</td>
<td>Autumn</td>
<td>Spring</td>
<td>Summer</td>
</tr>
<tr>
<td>Credit Value:</td>
<td>3(2-2)</td>
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<td></td>
</tr>
<tr>
<td>Level:</td>
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<td></td>
</tr>
<tr>
<td>Prerequisites:</td>
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<tr>
<td>Name of Course Instructor:</td>
<td>Dr. Inam-ul-Haq</td>
<td>No. of Students:15</td>
<td></td>
</tr>
<tr>
<td>Contact Hours:</td>
<td>03</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lectures:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other (Please State):</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Seminars:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assessment Methods:</td>
<td>give precise details (no &amp; length of assignments, exams, weightings etc)</td>
<td>12 marks (only theory)</td>
<td></td>
</tr>
<tr>
<td>Midterm:</td>
<td></td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>Final Theory:</td>
<td></td>
<td>24</td>
<td></td>
</tr>
<tr>
<td>Practical:</td>
<td></td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>Assignment:</td>
<td></td>
<td>04</td>
<td></td>
</tr>
<tr>
<td>Total:</td>
<td></td>
<td>60</td>
<td></td>
</tr>
</tbody>
</table>

Distribution of Grade/Marks and other Outcomes: (adopt the grading system as required)
Undergraduate Originally Registered %Grade A %Grade B %Grade C D E F No Grade Withdrawal Total
No. of Students 15 56.7% 36.18% - 15

Overview/Evaluation (Course Co-coordinator’s Comments)
Feedback: first summarize, and then comment on feedback received from:
(These boxes will expand as you type in your answer.)

a. Student (Course Evaluation) Questionnaires (Proforma-1)
   Informative course contains basic things

b. External Examiners or Moderators (if any)
   --Nil

Research student progress review
Thesis program both at master and Ph.D level offered biannually and usually initiation date start in month of September and March. Research is carried out usually in 3rd semester after the approval of synopsis. The feedback from research showed that students are mostly satisfied with facilities and supervision however few pointed out that more emphasis must be given on molecular side. Synopsis writ up and defence, comprehensive exam both oral and written is following university statutes and dates religiously. Mostly Ph. D students are on HEC scholarships or their research is funded through different research grants. Ph. D students given chance to demonstrate in bachelor classes which helpful for their grooming as future academicians or researchers. Almost every research student finishing his degree within stipulated time and adequate time and guidance given for manuscript writ up. Similarly, supervisor and their respective supervisory committee members also satisfied with their progress in research and is continuously monitored through lab meetings. Student feedback showed that students are both involved with laboratory and field research. Students are confident that after finishing their masters and Ph. D from department they can work independently and also contribute something positive to discipline of plant pathology.
Criterion 2: CURRICULUM DESIGN AND ORGANIZATION

Degree Title: B.Sc. (Hons) Agriculture, Majoring Plant Pathology

Intent: All the courses for degree program were developed by a committee constituted by the Higher Education Commission, Pakistan. The committee consisted of experts and learned professors, subject specialists from other universities and research organizations from Pakistan. When and if needed, curriculum for the Department of Plant Pathology is revised/updated through different bodies. At department level, Board of Studies, which comprised of senior faculty members, is responsible for updating the curriculum. This body is authorised to formulate syllabus and course content. The chairperson of the Department is the convener of this body. The courses are then sent to the Board of Faculty for approval. The Dean of the Faculty, who is also the Convener, conducts meeting. As per university rules courses after the approval from the Faculty Board, are placed before the University Academic Council for their approval.

Definition of credit hour
A student must complete a definite number of credit hours. One credit hour is one theory lecture or two hours laboratory (practical/week). One credit hour carries 20 marks.

Degree plan
Presently three degree programs are organized by the department.
B.Sc. (Hons) Agric. majoring in Plant Pathology: The B.Sc. (Hons) degree program consists of 4 academic years/ 8 semesters.

Pre-requisites: minimum academic requirements
A person holding intermediate science certificate (Pre-Medical & Pre-Engineering) or an equivalent certificate from any recognized institute with at least second division or overall 45 % marks. The candidates domiciled in the Barani Areas of Punjab are eligible for admission. The admission to the university is on merit which is determined on entry test and past academic performance. Merit is determined as per following formula:

- Mid Examination: 10%
- Intermediate: 50%
- Entry Test: 40%
Degree requirements

As a whole a student has to study 140 credit hours. In first four semesters, students study minor courses (Agriculture Sciences, Information Technology and Veterinary Sciences etc.). After the completion of four semesters, students choose a specialized field (major) of study. In the next four semesters courses of major specialized subject are taught including some other courses of other departments (Table 8). The final semester includes internship of 15 credit hours. Students are placed in research institutes to learn research techniques practically. Degrees are awarded after completing the required number of credit hours (courses) followed by internship report and its presentation.

Minimum Grade Point Average (GPA) for obtaining the degree in 2.50. To remain on the roll of the university a student shall be required to maintain the following minimum Cumulative Grade Point Average (CGPA) in each semester to be on the role of the University.

<table>
<thead>
<tr>
<th>Semester</th>
<th>CGPA</th>
</tr>
</thead>
<tbody>
<tr>
<td>First</td>
<td>0.75</td>
</tr>
<tr>
<td>Second</td>
<td>1.00</td>
</tr>
<tr>
<td>Third</td>
<td>1.25</td>
</tr>
<tr>
<td>Fourth</td>
<td>1.50</td>
</tr>
<tr>
<td>Fifth</td>
<td>1.75</td>
</tr>
<tr>
<td>Sixth</td>
<td>2.00</td>
</tr>
<tr>
<td>Seven</td>
<td>2.25</td>
</tr>
<tr>
<td>Eight</td>
<td>2.50</td>
</tr>
</tbody>
</table>

Examination and Weightage

a) Theory

In theory paper, students' evaluation is done by mid-term examination, assignments/ quizzes and final examination. Both the mid-term and final examinations are compulsory. A student who misses the mid-term examination is not allowed a make-up examination and is awarded zero marks in that examination. In case a student does not appear in the final examination of a course, he/she will be deemed to have failed in that course. In theory, weightage to each component of examination is as prescribed here under:
Mid Examination 30%
Assignments 10%
Final Examination 60%

b) Practical
For practical examination (if applicable) 100% weightage is given to practical in final examination.

Eligibility for Examination
A student is eligible to sit for the examination provided that he/she has attended not less than 75% of the classes in theory and practical, separately. The minimum pass marks for each course are 40% for undergraduate.

Scheme of studies and Course contents of B. Sc. (Hons.) Agriculture
Scheme of studies for B.Sc. (Hons.) Agri. is given in (Table 05). Detailed course contents of under-graduate and post graduate schemes of studies are given in Annexure 11 and 12, respectively.

Table 5 Scheme of studies and Course titles of B. Sc. (Hons.) Agriculture

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>AGR-301</td>
<td>Basic Agriculture</td>
<td>3(2-2)</td>
</tr>
<tr>
<td>AEC-301</td>
<td>Principles of Agricultural Economics</td>
<td>3(3-0)</td>
</tr>
<tr>
<td>ENG-301</td>
<td>Functional English</td>
<td>3(3-0)</td>
</tr>
<tr>
<td>HORT-301</td>
<td>Introduction to Horticulture</td>
<td>3(2-2)</td>
</tr>
<tr>
<td>IS-301/ET-301</td>
<td>Islamic Studies/ Ethics</td>
<td>2(2-0)</td>
</tr>
<tr>
<td>MATH-301/BIOL-301</td>
<td>Mathematics-I/ Biology-I</td>
<td>3(3-0)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3(2-2)</td>
</tr>
<tr>
<td>SS-301</td>
<td>Introduction to Soil Science</td>
<td>3(3-0)</td>
</tr>
</tbody>
</table>

Second Semester

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>AGR-302</td>
<td>Summer Crops</td>
<td>3(2-2)</td>
</tr>
<tr>
<td>ENG-302</td>
<td>Communication Skills</td>
<td>3(3-0)</td>
</tr>
<tr>
<td>FT-302</td>
<td>Introduction to Food Sciences Technology</td>
<td>2(2-0)</td>
</tr>
<tr>
<td>HORT-302</td>
<td>Principles of Horticultural Practices</td>
<td>2(1-2)</td>
</tr>
<tr>
<td>MATH-302/</td>
<td>Mathematics-II/</td>
<td>3(3-0)</td>
</tr>
<tr>
<td>Course No.</td>
<td>Course Title</td>
<td>Credit Hours</td>
</tr>
<tr>
<td>-----------</td>
<td>-----------------------------------------------------</td>
<td>--------------</td>
</tr>
<tr>
<td>BIOL-302</td>
<td>Biology-II</td>
<td>3(2-2)</td>
</tr>
<tr>
<td>RF-302</td>
<td>Introduction to Rangeland &amp; Wildlife Management</td>
<td>3(2-2)</td>
</tr>
<tr>
<td>SS-302</td>
<td>Soil and Water Conservation</td>
<td>2(2-0)</td>
</tr>
<tr>
<td>SSH-302</td>
<td>Pakistan Studies</td>
<td>2(2-0)</td>
</tr>
</tbody>
</table>

**Third Semester**

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>AGR-401</td>
<td>Winter Crops</td>
<td>3(2-2)</td>
</tr>
<tr>
<td>AS-401</td>
<td>Animal Husbandry</td>
<td>3(2-2)</td>
</tr>
<tr>
<td>ENT-401</td>
<td>Introductory Entomology</td>
<td>2(1-2)</td>
</tr>
<tr>
<td>FT-401</td>
<td>Food Processing and Preservation</td>
<td>3(2-2)</td>
</tr>
<tr>
<td>IT-401</td>
<td>Introduction to Information Technology</td>
<td>3(1-4)</td>
</tr>
<tr>
<td>PBG-401</td>
<td>Introductory Genetics</td>
<td>2(1-2)</td>
</tr>
<tr>
<td>RF-401</td>
<td>Introduction to Agro forestry and Watersheds</td>
<td>2(1-2)</td>
</tr>
<tr>
<td>PP-401</td>
<td>Introduction to Plant Pathogens</td>
<td>2(1-2)</td>
</tr>
</tbody>
</table>

**Fourth Semester**

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>AGR-402</td>
<td>Field Crop Physiology</td>
<td>3(2-2)</td>
</tr>
<tr>
<td>ENT-402</td>
<td>Applied Entomology</td>
<td>3(2-2)</td>
</tr>
<tr>
<td>AEE-402</td>
<td>Introduction to Agricultural Extension Education</td>
<td>3(3-0)</td>
</tr>
<tr>
<td>AS-402</td>
<td>Poultry Husbandry</td>
<td>2(1-2)</td>
</tr>
<tr>
<td>PBG-402</td>
<td>Introductory Plant Breeding</td>
<td>3(2-2)</td>
</tr>
<tr>
<td>STAT-402</td>
<td>Introduction to Statistics</td>
<td>3(3-0)</td>
</tr>
<tr>
<td>PP-402</td>
<td>Introduction to Plant Pathology</td>
<td>3(2-2)</td>
</tr>
</tbody>
</table>

**Fifth Semester**

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>AEN-501</td>
<td>Farm Mechanization</td>
<td>2(1-2)</td>
</tr>
<tr>
<td>AGRO-501</td>
<td>Arid Zone Agriculture</td>
<td>2(2-0)</td>
</tr>
<tr>
<td>SOC-501</td>
<td>Rural Pestral Sociology</td>
<td>2(2-0)</td>
</tr>
</tbody>
</table>

**General Courses**

**Major Courses**

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>PP-501</td>
<td>Introductory Mycology</td>
<td>3(2-2)</td>
</tr>
<tr>
<td>PP-503</td>
<td>Introductory Plant Nematology</td>
<td>3(2-2)</td>
</tr>
<tr>
<td>PP-505</td>
<td>Introduction to Prokaryotes</td>
<td>3(2-2)</td>
</tr>
<tr>
<td>PP-507</td>
<td>Introduction to Plant Viruses</td>
<td>3(2-2)</td>
</tr>
</tbody>
</table>
Sixth Semester

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>AEN-502</td>
<td>Conservation Engineering and Water Resources Development</td>
<td>2(1-2)</td>
</tr>
<tr>
<td>SS-508</td>
<td>Instrumentation and Laboratory Techniques</td>
<td>2(0-4)</td>
</tr>
</tbody>
</table>

Major Courses

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>PP-502</td>
<td>Introduction to Molecular Plant Pathology</td>
<td>3(2-2)</td>
</tr>
<tr>
<td>PP-504</td>
<td>Diseases of Field Crops</td>
<td>3(2-2)</td>
</tr>
<tr>
<td>PP-506</td>
<td>Diseases of Horticultural crops</td>
<td>3(2-2)</td>
</tr>
<tr>
<td>PP-508</td>
<td>Clinical Plant Pathology</td>
<td>3(1-4)</td>
</tr>
<tr>
<td>PP-510</td>
<td>Plant Resistance to Diseases</td>
<td>3(2-2)</td>
</tr>
</tbody>
</table>

Seventh Semester

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>STAT-601</td>
<td>Experimental Designs</td>
<td>2(1-2)</td>
</tr>
<tr>
<td>MGT-601</td>
<td>Introduction to Agri. Business Management</td>
<td>2(2-0)</td>
</tr>
</tbody>
</table>

Major Courses

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>PP-601</td>
<td>Principles and Methods of Plant Disease Management</td>
<td>3(2-2)</td>
</tr>
<tr>
<td>PP-603</td>
<td>Range and Forest Pathology</td>
<td>2(1-2)</td>
</tr>
<tr>
<td>PP-605</td>
<td>Seed and Post Harvest Pathology</td>
<td>3(2-2)</td>
</tr>
<tr>
<td>PP-609</td>
<td>Project Planning and Scientific Writing</td>
<td>2(1-2)</td>
</tr>
</tbody>
</table>

Eighth Semester

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>PP-602</td>
<td>Internship Including Report writing and Presentation</td>
<td>15(0-30)</td>
</tr>
</tbody>
</table>

Standard2-1: The curriculum must be consistent and support the program’s documented objectives.

Table 06 shows that the curriculum of the plant pathology department is consistent with the program objectives.
Table 6: Courses versus Outcomes

<table>
<thead>
<tr>
<th>Courses</th>
<th>Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>PP-609</td>
<td>+</td>
</tr>
</tbody>
</table>

+ = Satisfactory  
++ = moderately satisfactory  
+++ = Highly satisfactory

Assessment of the Plant Pathology Curriculum

The assessment of curriculum given in Table 8 and the courses are cross tabulated according to the program outcomes.

- The curriculum fits very well and satisfies the core requirements for the program, as specified the respective accreditation body.
- The curriculum satisfied the general arts and professional and other disciplines required for the program according to demands and requirements set by the Higher Education Commission of Pakistan.

Standard2-2: Theoretical backgrounds, problem analysis and solution design must be stressed within the program’s core material.

The following table-07 indicates courses that play vital role in building theoretical background, problem analysis and solution design.

Table 7: Detail of courses representing theoretical background, problem analysis and solution design.

<table>
<thead>
<tr>
<th>Elements</th>
<th>Courses</th>
<th>Title of the Courses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Theoretical background</td>
<td>PP-401</td>
<td>Introduction to Plant Pathogens</td>
</tr>
<tr>
<td></td>
<td>PP-402</td>
<td>Introduction to Plant Pathology</td>
</tr>
<tr>
<td></td>
<td>PP-501</td>
<td>Introductory Mycology</td>
</tr>
<tr>
<td></td>
<td>PP-503</td>
<td>Introductory Plant Nematology</td>
</tr>
<tr>
<td></td>
<td>PP-505</td>
<td>Introduction to Prokaryotes</td>
</tr>
<tr>
<td></td>
<td>PP-507</td>
<td>Introduction to Plant Viruses</td>
</tr>
</tbody>
</table>
While the curriculum was prepared, all aspects of information technology were considered and after a critical analysis, relevant aspects were integrated into the program as:

- Three computer and I.T. courses (6 credit hours) and two courses of statistics (6 credit hours) based on computer practical usage were included in the curriculum to fulfill the I.T. requirements for the students of B.Sc (Hons) Agric. degree.
- Computer

**Standard- 2.7: Oral and written communication skills of the student must be developed and applied in the program.**

- A course of 2 credit hours developing communication skills has been integrated in the curriculum of B.Sc. (Hons) Agriculture level.
- Assignments are given to B.Sc. (Hons) Agric. students on specific titles (part of the course) which are presented orally and are submitted as written report, to increase their oral and written communication skills.
Criterion 3: Laboratories and Computing Facilities

For undergraduate classes there is only one laboratory in the department. The facilities and shortcomings of this laboratory are listed as under.

a. **Laboratory Title:** General Laboratory for undergraduate Training

- **Location and Area:** Faculty of Agriculture and Food Sciences, B-Block, 2nd Floor, Main Campus

- **Objectives:** Laboratories are used for practical exercise and demonstrations to under-graduate students in their major courses.

- **Facilities:** Almost all the facilities are shared with post graduate laboratories.

- **Shortcoming:** Laboratories are not spacious and provided with inadequate facilities for general classes. Being on the top floor a lot of expensive material goes in vain because of contamination and high temperature as no cooling units are installed in laboratories. The standard requirements in view of equipment, chemicals and other resources are also not enough. Major apparatus viz. microscopes, autoclave, incubator, deep freezer, refrigerators, laminar flow cabinet, pH meter, electric balance, slide and overhead projectors, shaker, pipettes are available but most of them are still out of order.

- **Safety Regulations:** The department is located on the 2nd floor; there are no emergency exits for the labs. No fire extinguishers have been installed in any laboratory. No first aid kits / facilities for minor hazards and accidents/injuries are provided in the laboratories/department.

- **Standard-3.1:** Laboratory manuals/documentation/instructions for experiments must be available and easily accessible to faculty and students.

Laboratory manuals for each subject (Mycology, Nematology, Virology, Bacteriology, disease diagnosis diseases management) are now available.
In nutshell there are no proper safety arrangements and no security plan is available in case of emergency. The laboratories are not specious and inadequate. The equipments are out of order. Equipments regarding molecular approaches are lacking e.g. Stereoscope, centrifuge (slow and ultra), PAG-Electrophoresis apparition, P.C.R. Spectrophotometer, N.P.L.C. relevant software, chemicals and biochemicals.

**Standard-3.2: There must be support personal for instruction and maintaining the laboratories.**

The laboratory attendants do not have the relevant knowledge. Repairing of equipments involves alot of money. Therefore, there is a dire need of appointing a skilled technician and if one is there at the campus, he should be given training for handling specialized equipments intermittently.

**Standard-3.3: The University computing infrastructure and facilities must be adequate to support program’s objectives.**

- **Computing facilities support**: Not available to all faculty members.
- **Shortcoming in computing infrastructure**: Computers with internet facilities should be available to all faculty members
Criterion 4: Student Support and Advising

Our University organizes support programs for students and provide information regarding admission, scholarship schemes etc. Department in its own capacity arranges orientation and guided tours of the department. Director Students Affairs is also there and arranges various cultural activities and solves the students’ problems. However currently there is no Parent/Teacher association.

<table>
<thead>
<tr>
<th>Standard-4.1: Courses must be offered with sufficient frequency and number for students to complete the program in a timely manner.</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Courses are taught as per criteria of HEC.</td>
</tr>
<tr>
<td>• At undergraduate level subjects/courses are offered as per scheme of study provided by the HEC and approved by Academic Council.</td>
</tr>
<tr>
<td>• Elective courses are offered as per policy of HEC and the University.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Standard-4.2: Courses in the major area of study must be structured to ensure effective interaction between students, faculty and teaching assistants.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Both theoretical and field/practical aspects are focused to prepare the students for field challenges. Theoretical problems are explained and assignments are also given to the students whereas, practical are carried out in the labs and filed. Field visits and study tours to various research organizations are also organized to keep them update on the latest developments in the area and to stimulate them for discussion through teacher/student interaction.</td>
</tr>
<tr>
<td>• Courses are structured and decided in the board of studies meeting.</td>
</tr>
<tr>
<td>• At commencement of each semester, faculty members interact frequently among themselves and with students. Students are welcome to ask question in class and even after the class.</td>
</tr>
<tr>
<td>• Emphasis is always given for an effective interaction between each section of B.Sc. (Hons) classes.</td>
</tr>
</tbody>
</table>
Several steps have been taken to provide guidance to students by different ways such as:

- Students are informed about the program requirement through the chairman office.
- Through the personal communication of the teachers with the students.
- Monthly meetings are organized by the head of the department for counseling of the students. In addition, students can also contact with the relevant teachers whenever they face any problem.
- It is necessary for the students to participate in the monthly meeting.
- In case of some problem, Director Student Affairs appointed by the university helps the students. Tutorial System in all departments has also been introduced.
- Tow periods on Thursday are reserved for extracurricular activities. Due to great significance, students must be motivated to participate in such activities. However, there is no such counseling cell in the department.
- Student can interact with the teachers/scientist in universities or research organization whenever they needed and there is an open option for the students to get the membership in the professional societies like Pakistan Phytopathological Society, Mycology and Plant Pathology Society, Pakistan Society of Nematologists, Pakistan Botanical Society and other relevant professional societies.
Criterion 5: Process Control

It includes students’ admission, registration and faculty recruitment activities, which are dealt by various statutory bodies and the university administration.

**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 process of admission is well established and is followed under the relevant rules and criteria set by HEC. For this purpose an advertisement is published in the National News Papers by the Registrar Office.
- Admission criteria for B.Sc. (Hons) Agri. are F.Sc. pre medical or pre engineering with minimum of second division and entry test.
- Admission criteria are revised every year before the announcement of admission.

**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 name, after completion of the admission process, is forwarded to the Registrar Office for proper registration in the specific program and the registration number is issued to the student.
- After the 4th semester students are allotted different majors (e.g. Plant Pathology, Entomology etc.) by the Dean Faculty of Crop and Food Sciences.
- Students are evaluated through Mid, Final and Practical exams and through Assignments.
- Registration is done for one time for each degree but evaluation is done through the result of each semester. Only those students, who fulfill the criteria of the University, are promoted to the next semester.
- In general, the students are registered on competition bases keeping in view the academic and research standards.
**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.

Recruitment policy followed by the University is the same as recommended by the HEC. Induction of all posts is done as per rule.

- Vacant and newly created positions are advertised in the national newspapers, applications are received by the Registrar office, scrutinized by the scrutiny committee, 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.
- The candidates are interviewed by the University Selection Board, and Principal and alternate candidates are selected.
- Selection of candidates is approved by the Syndicate for issuing orders to join within a specified period.
- Induction of new candidates depends upon the number of approved vacancies.
- Standard set by HEC are followed.
- At present, no procedure exists for retaining highly qualified faculty members. However, the revised pay scales structure is quite attractive.
- HEC also supports appointment of highly qualified members as foreign faculty Professors, National Professors and deputes them in concerned departments of the University.

**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 meting its objectives.

- To provide high quality teaching, department periodically revises the curriculum in views of field requirements, innovations and new technology.
• With the emergence of new fields, new courses are introduced and included in the curriculum.

• Students usually buy cheap Asian editions of technology books. These are also available in the University library, where documentation, copying and internet facilities are available.

• Notes are also prepared by the teachers and given to the students.

• Most of the lectures are supplemented by overheads, slides and pictures.

• All efforts are made that the courses and knowledge imparted meet the objectives and outcome. The progress is regularly reviewed in the staff meetings.

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 controller of examinations announces the date regarding commencement of examination. After each semester, the controller office notifies results of the students. The evaluation procedure consists of quizzes, mid and final examinations, practicals, assignments, reports, oral and technical presentations. The minimum pass marks for each course is 40% for undergraduate in theory and practical, separately.

• In theory, weightage to each component of examination is as prescribed here under:

<table>
<thead>
<tr>
<th>Component</th>
<th>Weightage</th>
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</thead>
<tbody>
<tr>
<td>Mid Examination</td>
<td>30%</td>
</tr>
<tr>
<td>Assignments</td>
<td>10%</td>
</tr>
<tr>
<td>Final Examination</td>
<td>60%</td>
</tr>
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</table>

Grade points are as follows

<table>
<thead>
<tr>
<th>Marks Obtained</th>
<th>Grade</th>
<th>Grade point</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>80-100 %</td>
<td>A</td>
<td>4</td>
<td>Excellent</td>
</tr>
<tr>
<td>65-79 %</td>
<td>B</td>
<td>3</td>
<td>Good</td>
</tr>
<tr>
<td>50-64 %</td>
<td>C</td>
<td>2</td>
<td>Satisfactory</td>
</tr>
<tr>
<td>40-49 %</td>
<td>D</td>
<td>1</td>
<td>Pass</td>
</tr>
<tr>
<td>Below 40 %</td>
<td>F</td>
<td>0</td>
<td>Fail</td>
</tr>
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<td>-----------</td>
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</tbody>
</table>
**Criterion 6: Faculty**

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

At present there are two professors, two associate professors, two assistant professors, three lecturers and two subject specialists are working in the programme. Out of them, four faculty members were abroad: one assistant professor for Ph.D studies, one lecturer, one assistant professor for post doctorate studies and one professor on ex-Pakistan leave. Their field of specialization is mycology, plant virology, phytonematology and plant bacteriology (Table08).

**Table 08. Faculty Distribution by Program Areas in Plant Pathology**

<table>
<thead>
<tr>
<th>Program area of specialization</th>
<th>Courses in the area and average number of sections per year</th>
<th>Number of faculty members in each area</th>
<th>Number of faculty with Ph.D. degree</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Plant Pathology</td>
<td>25</td>
<td>05</td>
<td></td>
</tr>
<tr>
<td>Mycology</td>
<td>03</td>
<td>01</td>
<td>04</td>
</tr>
<tr>
<td>Plant Virology</td>
<td>02</td>
<td>02</td>
<td>02</td>
</tr>
<tr>
<td>Phyto nematology</td>
<td>02</td>
<td>01</td>
<td>01</td>
</tr>
<tr>
<td>Plant Bacteriology</td>
<td>02</td>
<td>01</td>
<td>01</td>
</tr>
<tr>
<td>Others</td>
<td>04</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>38</td>
<td>10</td>
<td>8</td>
</tr>
</tbody>
</table>

**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

- Professional training and availability of adequate research and academic facilities are provided to the faculty members according to the available resources.
Currently two faculty members are abroad on study leave for post doctoral degree as sponsored by the HEC where as one member is doing his Ph.D. in UK.

Incentives in the form of allowances to theses supervisors have been implemented lately to promote high standard research.

Existing facilities include mainly internet access, which is available through local area network. In addition library facility with latest books is also available.

Support for attending conferences can lead to enhancement of research initiatives at the university.

A university-funded program of research projects is providing financial support to the young faculty members.

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

The young faculty is mobilized by timely back up and appreciation by the senior faculty members. Avenues for research funding are provided through university research fund. There should be the programs and processes in place to attract good faculty members e.g. teaching and research awards annually, reasonable teaching load and class size, social activities and better salary package.

Results of faculty survey employing Proforma 5 (Annexure-V) were summarized and are depicted in figure 8. Their satisfaction level upon the queries pertaining in proforma 5 revealed that all the teachers were found satisfied over most of the parameters. However, they had concern that the laboratory conditions should be improved, level of monitoring, and cooperation with colleagues and of teachers also need to be addressed.
Fig. 9 Faculty Survey
Criterion 7: Institutional Facilities

Among the institutional facilities, the institution must have the amenities to support new trends in learning such as library, e-learning including digital publications, journals etc.

- The library must possess an up-to-date technical collection relevant to the program and must be adequately staffed with professional personnel. Insufficient library’s technical collection of books with increasing number of the students the recommended books and research journals of the programs are not enough for the students.
- These aspects need to be strengthened in number and space.
- Well equipped class rooms and offices must be adequate to enable faculty to carry out their responsibilities.

Standard wise description of this criterion is given as under

Standard- 7.1: The institution must have the infrastructure to support new trends in learning such as e-learning.

The faculty has access to E-library which is very helpful for the high quality education and producing research of international standard. They also have access to the internet. However the department has the following shortcomings/problems:

- Majority of the faculty members do not have access to the PCs. One who have some they have their own computer and are not provided by the university.
- The internet services provided by the university are very poor. The speed of internet is slow and often internet does not work. The intercom is connected with the internet and the services are often breached.
- Breach of power intermittently, due to which research and academic work both are suffered.
- Majority of equipments is either out of order or outdated.
- Latest and modern molecular equipments or apparatus are lacking.
- Untrained supporting staff.
- Faculties lack practical knowledge of modern and molecular techniques.
- Fans and tube lights are out of order and are not properly and timely repaired.

**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 Central Library has limited number of books, international journals and periodicals. It’s a small library in term of space and facilities with no catalogue systems. It does not meet the standards of a University Library. However department itself owns few books in its library.

**Standard- 7.3:** Class-rooms must be adequately equipped and offices must be adequate to enable faculty to carry out their responsibilities.

Currently, the class rooms are not enough and the space is not only limited but also some basic facilities are lacking. Multimedia is now available but due to unavailability of the lecture room, it has no fix place and is kept moving from one place to another thus some times become problematic Practical lab space is also lacking. This affects the quality of teaching. The faculty offices are another serious problem of the department. Some faculty members are sharing small rooms and the other are having their desks in the laboratories.
Criterion 8: Institutional Support

The university administration has been struggling hard to strengthen all the departments, upgrade them and establish new faculties and Institutes. The university is also trying to attract highly qualified faculty.

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.

- At present department is having a very meager financial resource to maintain the present needs of the department. Individual research grants for students and faculty are mainly supporting the departmental research activities. Due to lack of proper facilities, the students conduct their research in National Agricultural Research Institute. There is a dire need for increasing the financial resources allocated to the department to establish a departmental library, laboratories and computer facilities. Plant Pathology department has recently submitted a project for strengthening of department. We are hoping to receive funding during the next year. Suggestions and factors that can contribute to the motivation of the faculty are given as follows:
  - Research grants for young faculty members may be allocated.
  - Foreign trainings should be arranged for the faculty members.

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

The intake of B.Sc. (Hons) and M.Sc. (Hons) students is once in a year. A strict merit policy is applied during admission.

Standard 8-3: Financial resources must be provided to acquire and maintain Library holdings, laboratories and computing facilities.
Total budget of the department in 2007-08 was just Rs 32,000/- Rs., which was amplified up to 4,20,000/- Rs. in 2009-10. Which has improved the financial condition of the department and the department can now purchase the equipments and chemicals for laboratories which are used for conducting the practical. Some books are also purchased for the department library.

Conclusion:

Unfortunately, some aspect of institutional support are very weak such as:

- Unavailability of class rooms, classes are taken in the labs.
- Faculty offices are inadequate and therefore, two or three teachers have one office room.
- Space limitation is the major constraint in the development and strengthening of discipline.
- The department at present avails all the human resources assigned with the addition of two national Professors from HEC. Moreover, the upgradation of existing teaching cadre also provided and added advantage in retaining the present faculty.
- Insufficient secretarial support, technical staff and office equipment.
SUMMARY AND CONCLUSIONS

Department of Plant Pathology offered M.Sc (Hons) degree in 1996 and since then produced around 140 MS students. The core idea of M.Sc (Hons) program to polish under-graduates knowledge in Plant Pathology discipline and prepare them to take lab and filed challenges by themselves. Students were given fair chance to select major area of research among different disciplines within plant Pathology i.e. Mycology, Virology, Bacteriology and Nematology. A post-graduate advisor also helps them in selection of area of research. The quality of this program could gauge from the fact that undergraduates from Quetta, Sargodha, Peshawar and Faisalabad continuously enrolling MS studies at PMAS-AAUR.

For MS thesis research students are encouraged to work in area which has direct relation with Pothowar region and all the performance of students is closely monitored by supervisory committee which comprised of supervisor and two members including one member outside department. Directorate of advance study and research also check the thesis according to University and HEC instructions. Though, MS is research degree but teaching is not ignored and it reflected from student evaluation of teacher and courses where students gave more than 85% to every teacher. Similarly, by and large students are satisfied with courses which modulated according to HEC curriculum.

Special problem and seminar are added in course work to improve students written and oral communication skills. Students are asked to submit research paper along thesis which thoroughly checked for genuine research and plagiarism. All these efforts bring good results as both students and their employees are satisfied with their knowledge of the subject. It is plausible to mention that students from other disciplines of agriculture also study courses of plant pathology to get more exposure of plant diseases which are looming threat to sustainable agriculture production.

However, there is 2-3 fold increase of MS students in recent years while infrastructure in terms of lab, library and lecture hall is no sufficient to cop the situation. This can also reflected from student feedback. Field based research and exposure is another area which must be addressed in coming years.
Conclusions:

Efficiency of the department may be further improved through adopting various steps. Some of the salients are as under.

1. Laboratories not only need new equipments but the old one should be repaired. So that the graduate and postgraduate students may carry out their research without any difficulty..

2. Existing number of class rooms are not sufficient. Available rooms need improvement to provide Conducive environment for student’s learning.

3. The department needs a project for strengthening of the program. After that department may provide more facilities to the graduate and post graduate students.

4. There is also a need to improve level of cooperation among the faculty members as well as students for better results.

5. Faculty members have pointed out that salaries and compensation may be improved for more satisfactory job performance.

6. There is also a need to improve mix of research and teaching proportion to produce professionally sound graduates.

7. Professional and behavioral training of the supporting staff should be held periodically. Such sort of training will improve their utility in carrying out research and teaching quality.

8. For the departmental library allocation of sufficient funds will be helpful in subscription of reputed journals and purchase of recent books that will ultimately boost quality of learning, teaching and research.

9. Survey has also pointed out a shortage of personal computers and slow speed of internet. Improvement in this area will also boost the level of research and teaching.

10. Professional training of the faculty through HEC/ other sponsors is helpful to carryout research on latest trends in plant pathology / molecular aspects of plant pathology. HEC is requested to arrange this type of foreign trainings for the rest of the faculty members for improving skills, broadening vision of the faculty.
# Proforma - 1

**Student Course Evaluation Questionnaire**  
*(To be filled by each Student at the time of Course Completion)*

Department __________________________ Course No ____________________

Course Title __________________________ Teacher Name ____________________

Year of Study __________________________ Semester / Term ____________________

*Please give us your views so that Course quality can be improved. You are encouraged to be frank and constructive in your comments.*

## CORE QUESTIONS

<table>
<thead>
<tr>
<th>Course Content and Organization</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Uncertain</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The course objectives were clear</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>2. The Course workload was manageable</td>
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<tr>
<td>3. The Course was well organized (e.g. timely access to materials, notification of changes, etc.)</td>
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<td>4. Comments</td>
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</table>

<table>
<thead>
<tr>
<th>Student Contribution</th>
<th>&lt;20%</th>
<th>21-40%</th>
<th>41-60%</th>
<th>61-80%</th>
<th>&gt;81%</th>
</tr>
</thead>
<tbody>
<tr>
<td>5. Approximate level of your own attendance during the whole Course</td>
<td>Strongly Agree</td>
<td>Agree</td>
<td>Uncertain</td>
<td>Disagree</td>
<td>Strongly Disagree</td>
</tr>
<tr>
<td>6. I participated actively in the Course</td>
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<tr>
<td>7. I think I have made progress in this Course</td>
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<tr>
<td>8. Comments</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Learning Environment and Teaching Methods</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Uncertain</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>9. I think the Course was well structured to achieve the learning outcomes (there was a good balance of lectures, tutorials, practical etc.)</td>
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<tr>
<td>10. The learning and teaching methods encouraged participation.</td>
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<tr>
<td>11. The overall environment in the class was conducive to learning.</td>
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<tr>
<td>12. Classrooms were satisfactory</td>
<td></td>
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<tr>
<td>13. Comments</td>
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Proforma - 1
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(To be filled by each Student at the time of Course Completion)

Department __________________________ Course No __________________
Course Title __________________________ Teacher Name ________________
Year of Study ______________ Semester / Term ______________________

Please give us your views so that Course quality can be improved. You are encouraged to be frank and constructive in your comments.

**CORE QUESTIONS**

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<td>4. Comments</td>
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<th>61-80%</th>
<th>&gt;81%</th>
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<tr>
<td>5. Approximate level of your own attendance during the whole Course</td>
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<table>
<thead>
<tr>
<th>Learning Environment and Teaching Methods</th>
<th>Strongly Agree</th>
<th>Agree</th>
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<tr>
<td>13. Comments</td>
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</tbody>
</table>
## Learning Resources

<table>
<thead>
<tr>
<th></th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Uncertain</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>14.</td>
<td>Learning materials (Lesson Plans, Course Notes etc.) were relevant and useful.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15.</td>
<td>Recommended reading Books etc. were relevant and appropriate</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16.</td>
<td>The provision of learning resources in the library was adequate and appropriate</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17.</td>
<td>The provision of learning resources on the Web was adequate and appropriate (if relevant)</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>18.</td>
<td>Comments</td>
<td></td>
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## Quality of Delivery

<table>
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<tr>
<th></th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Uncertain</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>19.</td>
<td>The Course stimulated my interest and thought on the subject area</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>20.</td>
<td>The pace of the Course was appropriate</td>
<td></td>
<td></td>
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<tr>
<td>21.</td>
<td>Ideas and concepts were presented clearly</td>
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<td></td>
<td></td>
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</tr>
<tr>
<td>22.</td>
<td>Comments</td>
<td></td>
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</table>

## Assessment

<table>
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<tr>
<th></th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Uncertain</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>23.</td>
<td>The method of assessment were reasonable</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>24.</td>
<td>Feedback on assessment was timely</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>25.</td>
<td>Feedback on assessment was helpful</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>26.</td>
<td>Comments</td>
<td></td>
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</table>

## Additional Core Questions

### Instructor / Teaching Assistant Evaluation

<table>
<thead>
<tr>
<th></th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Uncertain</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>27.</td>
<td>I understood the lectures</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>28.</td>
<td>The material was well organized and presented</td>
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<td></td>
</tr>
<tr>
<td>29.</td>
<td>The instructor was responsive to student needs and problems</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30.</td>
<td>Had the instructor been regular throughout the course?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Tutorial

<table>
<thead>
<tr>
<th></th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Uncertain</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>30.</td>
<td>The material in the tutorials was useful</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>31.</td>
<td>I was happy with the amount of work needed for tutorials</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>32.</td>
<td>The tutor dealt effectively with my problems</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Practical
33. The material in the practicals was useful
34. The demonstrators dealt effectively with my problems.

Overall Evaluation
35. The best features of the Course were:

36. The Course could have been improved by:

Equal Opportunities Monitoring (Optional)
37. The University does not tolerate discrimination on any irrelevant distinction (e.g. race, age, gender) and is committed to work with diversity in a wholly positive way. Please indicate below anything in relation to this Course which may run counter to this objective:

Demographic Information: (Optional)
38. Full/part time study: Full Time ☐ Part Time ☐
39. Do you consider yourself to be disabled: Yes ☐ No ☐
40. Domicile:
41. Gender: Male ☐ Female ☐
42. Age Group: less than 22 ☐ 22-29 ☐ over 29 ☐
43. Campus: Distance Learning/ Collaborative ☐

THANK YOU


## Proforma 2

### Faculty Course Review Report
(To be filled by each teacher at the time of Course Completion)

For completion by the course instructor and transmission to Head of Department of his/her nominee (Dept. Quality Officer) together with copies of the Course Syllabus outline

<table>
<thead>
<tr>
<th>Department:</th>
<th>Faculty:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Course Code:</td>
<td>Title:</td>
</tr>
<tr>
<td>Session:</td>
<td>Semester:</td>
</tr>
<tr>
<td>Credit Value:</td>
<td>Level:</td>
</tr>
<tr>
<td>Name of Course Instructor:</td>
<td>No. of Students Contact Hours</td>
</tr>
<tr>
<td>Assessment Methods:</td>
<td>Seminars</td>
</tr>
</tbody>
</table>

### Distribution of Grade/Marks and other Outcomes: (adopt the grading system as required)

<table>
<thead>
<tr>
<th>Undergraduate</th>
<th>Originally Registered</th>
<th>% Grade A</th>
<th>% Grade B</th>
<th>% Grade C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>No Grade</th>
<th>Withdrawal</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of Students</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Post-Graduate</th>
<th>Originally Registered</th>
<th>% Grade A</th>
<th>% Grade B</th>
<th>% Grade C</th>
<th>D</th>
<th>E</th>
<th>No Grade</th>
<th>Withdrawal</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of Students</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Overview/Evaluation (Course Co-coordinator's Comments)
Feedback: first summarize, then comment on feedback received from:
(These boxes will expand as you type in your answer.)

1) Student (Course Evaluation) Questionnaires
2) External Examiners or Moderators (if any)

3) Student/staff Consultative Committee (SSCC) or equivalent, (if any)

4) Curriculum: comment on the continuing appropriateness of the Course curriculum in relation to the intended learning outcomes (course objectives) and its compliance with the HEC Approved/Revised National Curriculum Guidelines

5) Assessment: comment on the continuing effectiveness of method(s) of assessment in relation to the intended learning outcomes (Course objectives)

6) Enhancement: comment on the implementation of changes proposed in earlier Faculty Course Review Reports

7) Outline any changes in the future delivery or structure of the Course that this semester/term's experience may prompt

Name: __________________________ Date: ________________

(Course Instructor)

Name: __________________________ Date: ________________

(Head of Department)
Proforma 3

Survey of Graduating Students

(To be filled out by graduating students in last semester/year before the award of degree)

The survey seeks graduating students' input on the quality of education they received in their program and the level of preparation they had at university. The purpose of this survey is to assess the quality of the academic programs. We seek your help in completing this survey.

A: Very satisfied  B: Satisfied  C: Uncertain  D: Dissatisfied  E: Very dissatisfied

1. The work in the program is too heavy and induces a lot of pressure
   A  B  C  D  E

2. The program is effective in enhancing team-working abilities.
   A  B  C  D  E

3. The program administration is effective in supporting learning.
   A  B  C  D  E

4. The program is effective in developing analytical and problem solving skills.
   A  B  C  D  E

5. The program is effective in developing independent thinking.
   A  B  C  D  E

6. The program is effective in developing written communication skills.
   A  B  C  D  E

7. The program is effective in developing planning abilities.
   A  B  C  D  E

8. The objectives of the program have been fully achieved
   A  B  C  D  E

9. Whether the contents of curriculum are advanced and meet program objectives
   A  B  C  D  E

10. Faculty was able to meet the program objectives
    A  B  C  D  E
11. Environment was conducive for learning
   
   A   B   C   D   E

12. Whether the Infrastructure of the department was good.
   
   A   B   C   D   E

13. Whether the program was comprised of Co-curricular and extra-curricular activities
   
   A   B   C   D   E

14. Whether scholarships/grants were available to students in case of hardship
   
   A   B   C   D   E

Answer question 9 if applicable.

9. The internship experience is effective in enhancing
   
a. Ability to work in teams (A) (B) (C) (D) (E)
b. Independent thinking (A) (B) (C) (D) (E)
c. Appreciation of ethical Values (A) (B) (C) (D) (E)
d. Professional development (A) (B) (C) (D) (E)
e. Time management skills (A) (B) (C) (D) (E)
f. Judgment (A) (B) (C) (D) (E)
g. Discipline (A) (B) (C) (D) (E)
h. The link between theory and practice (A) (B) (C) (D) (E)

10. What are the best aspects of your program?

   __________________________________________________________
   __________________________________________________________
   __________________________________________________________
   __________________________________________________________
   __________________________________________________________
   __________________________________________________________

11. What aspects of your program could be improved?

   __________________________________________________________
   __________________________________________________________
   __________________________________________________________
   __________________________________________________________
   __________________________________________________________
   __________________________________________________________

You may use additional sheets for questions 10 & 11 if needed.
Proforma 4

RESEARCH STUDENT PROGRESS REVIEW FORM

(To be filled out by Master/ M.Phil / Ph.D Research Students on six monthly basis)

To be submitted by the HoD / Dept. Quality Officer to the QEC

For Research Student to Complete:

1. Date of admission to the department
2. Date of initiation of research
3. Date of completion of Course work
4. Number of credit hours completed
5. Date of Synopsis Defense
6. Cumulative Grade Point Average (CGPA) secured
7. Please outline details of progress in your research since your last review (including any research publications):

8. Do you have any comments on the level of supervision received?

9. What do you plan to achieve over the next 6 months?

10. Do you have any comments on generic or subject-specialist training you may have received or would like to receive internally and/or externally?

11. Do you have easy access to sophisticated scientific equipment?

12. Do you have sufficient research material/commodities available?

Student ___________________________ Date: _________________

Supervisory Committee Comments:

(Please comment on and benchmark the student’s progress against your University’s internal and external HEC Quality Criteria for Master/PhD/MPhil Studies)

Principal Supervisor: _______________ Date: _______________
Co-Supervisor: __________________  Date: ____________
Co-Supervisor: __________________  Date: ____________

Head of Department Comments:

Signature: _____________________  Date: ____________

Director, Board of Research Studies (or equivalent) Comments:

Signature: _____________________  Date: ____________

Dean/Director, QEC Action: (including monitoring of Follow-up action) Date: ____________
Proforma 5

Faculty Survey
(To be submitted on annual basis by each faculty member)

The purpose of this survey is to assess faculty members’ satisfaction level and the effectiveness of programs in place to help them progress and excel in their profession. We seek your help in completing this survey and the information provided will be kept in confidence. Indicate how satisfied are you with each of the following aspects of your situation at your department?

A: Very satisfied   B: Satisfied   C: Uncertain   D: Dissatisfied   E: Very dissatisfied

1. Your mix of research, teaching and community service.
   A       B       C       D       E

2. The intellectual stimulation of your work.
   A       B       C       D       E

3. Type of teaching/research you currently do.
   A       B       C       D       E

4. Your interaction with students.
   A       B       C       D       E

5. Cooperation you receive from colleagues.
   A       B       C       D       E

6. The mentoring available to you.
   A       B       C       D       E

7. Administrative support from the department.
   A       B       C       D       E

8. Providing clarity about the faculty promotion process.
   A       B       C       D       E

9. Your prospects for advancement and progress through ranks.
   A       B       C       D       E

10. Salary and compensation package.
    A       B       C       D       E
11. Job security and stability at the department.
   A   B   C   D   E

12. Amount of time you have for yourself and family.
   A   B   C   D   E

13. The overall climate at the department.
   A   B   C   D   E

14. Whether the department is utilizing your experience and knowledge.
   A   B   C   D   E

15. What are the best programs / factors currently available in your department that enhance your motivation and job satisfaction?
   ________________________________________________________________
   ________________________________________________________________
   ________________________________________________________________
   ________________________________________________________________
   ________________________________________________________________

16. Suggest programs / factors that could improve your motivation and job satisfaction?
   ________________________________________________________________
   ________________________________________________________________
   ________________________________________________________________
   ________________________________________________________________
   ________________________________________________________________

Information about faculty member

i. Academic rank:
   A: Professor   B: Associate Professor   C: Assistant Professor   D: Lecturer
   E: Other

ii. Years of service:
    A: 1-5   B: 6-10   C: 11-15   D: 16-20   E: >20

Name: ___________________ Signature: ___________________ Date: _______________
**SURVEY OF DEPARTMENT OFFERING Ph.D. PROGRAMS**

The following information is required for EACH Department in which a Ph.D. program is offered.

<table>
<thead>
<tr>
<th></th>
<th>General Information:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Name of Department</td>
</tr>
<tr>
<td>1.2</td>
<td>Name of Faculty</td>
</tr>
<tr>
<td>1.3</td>
<td>Date of initiation of Ph.D. program</td>
</tr>
<tr>
<td>1.4</td>
<td>Total number of academic journals subscribed in area relevant to Ph.D. program</td>
</tr>
<tr>
<td>1.5</td>
<td>Number of Computers available per Ph.D. student</td>
</tr>
<tr>
<td>1.6</td>
<td>Total Internet Bandwidth available to all the students in the Department.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Faculty Resources:</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Number of faculty members holding Ph.D. degree in the department</td>
</tr>
<tr>
<td>2.2</td>
<td>Number of HEC approved Ph.D. Advisors in the department.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Research Output:</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Total number of articles published last year in International Academic Journals that are authored by faculty members and students in the department.</td>
</tr>
<tr>
<td>3.2</td>
<td>Total number of articles published last year in Asian Academic Journals that are authored by faculty members and students in the department.</td>
</tr>
<tr>
<td>3.3</td>
<td>Total number of ongoing research projects in the department funded by different organizations</td>
</tr>
<tr>
<td>3.4</td>
<td>Number of post-graduate students in the department holding scholarships/fellowships.</td>
</tr>
<tr>
<td>3.5</td>
<td>Total Research Funds available to the Department from all sources.</td>
</tr>
<tr>
<td>3.6</td>
<td>Number of active international linkages involving exchange of researchers/students/faculty etc. (Attach Details).</td>
</tr>
<tr>
<td></td>
<td>Student Information:</td>
</tr>
<tr>
<td>---</td>
<td>---------------------</td>
</tr>
<tr>
<td>4</td>
<td><strong>Student Information:</strong></td>
</tr>
<tr>
<td>4.1</td>
<td>Number of Ph.D. degrees conferred to date to students from the Department during the past three academic years.</td>
</tr>
<tr>
<td>4.2</td>
<td>Number of Ph.D. students currently enrolled in the department.</td>
</tr>
<tr>
<td>4.3</td>
<td>Ratio of number of students accepted to total number of applicants for Ph.D. Program.</td>
</tr>
<tr>
<td>5</td>
<td><strong>Program Information</strong></td>
</tr>
<tr>
<td>5.1</td>
<td>Entrance requirements into Ph.D. Program (M.Sc. / M.Phil.) Indicate subjects or M.Sc. / M.Phil.</td>
</tr>
<tr>
<td>5.2</td>
<td>Is your Ph.D. program based on research only? (Y/N)</td>
</tr>
<tr>
<td>5.3</td>
<td>Maximum number of years in which a Ph.D. degree has to be completed after initial date of enrollment in Ph.D. program.</td>
</tr>
<tr>
<td>5.4</td>
<td>Total number of post M.Sc. (16 year equivalent) courses required for Ph.D.</td>
</tr>
<tr>
<td>5.5</td>
<td>Total number of M.Phil. level courses taught on average in a Term / Semester.</td>
</tr>
<tr>
<td>5.6</td>
<td>Total number of Ph.D. level courses taught on average in a Term / Semester.</td>
</tr>
<tr>
<td>5.7</td>
<td>Do your students have to take/write:</td>
</tr>
<tr>
<td></td>
<td>a. Ph.D. Qualifying examination (Y/N)</td>
</tr>
<tr>
<td></td>
<td>b. Comprehensive examination (Y/N)</td>
</tr>
<tr>
<td></td>
<td>c. Research paper in HEC approved Journal</td>
</tr>
<tr>
<td></td>
<td>d. Any other examination (Y/N)</td>
</tr>
<tr>
<td>5.8</td>
<td>Total number of International examiners to which the Ph.D. dissertation is sent.</td>
</tr>
<tr>
<td>5.9</td>
<td>How is the selection of an examiner from technologically advanced countries carried out?</td>
</tr>
<tr>
<td>5.10</td>
<td>Is there a minimum residency requirement (on campus) for award of Ph.D. degree?</td>
</tr>
<tr>
<td>6</td>
<td><strong>Additional Information</strong></td>
</tr>
<tr>
<td>6.1</td>
<td>Any other information that you would like to provide.</td>
</tr>
</tbody>
</table>
Alumni Survey

(To be filled by Alumni - after the completion of each academic year)

The purpose of this survey is to obtain alumni input on the quality of education they received and the level of preparation they had at University. The purpose of this survey is to assess the quality of the academic program. We seek your help in completing this survey.

A: Excellent  B: Very good  C: Good  D: Fair  E: Poor

1. Knowledge
   1. Math, Science, Humanities and professional discipline, (if applicable)
      (A) (B) (C) (D) (E)
   2. Problem formulation and solving skills
      (A) (B) (C) (D) (E)
   3. Collecting and analyzing appropriate data
      (A) (B) (C) (D) (E)
   4. Ability to link theory to practice
      (A) (B) (C) (D) (E)
   5. Ability to design a system component or process
      (A) (B) (C) (D) (E)
   6. IT knowledge
      (A) (B) (C) (D) (E)

II Communications Skills:
   1. Oral communication
      (A) (B) (C) (D) (E)
   2. Report writing
      (A) (B) (C) (D) (E)
   3. Presentation skills
      (A) (B) (C) (D) (E)

III Interpersonal Skills:
   1. Ability to work in teams
      (A) (B) (C) (D) (E)
   2. Ability to work in arduous /Challenging situation
      (A) (B) (C) (D) (E)
   3. Independent thinking
      (A) (B) (C) (D) (E)
   4. Appreciation of ethical Values
      (A) (B) (C) (D) (E)

IV Management /Leadership Skills:
   1. Resource and Time management skills
      (A) (B) (C) (D) (E)
   2. Judgment
      (A) (B) (C) (D) (E)
   3. Discipline
      (A) (B) (C) (D) (E)

V General Comments:
Please make any additional comments or suggestions, which you think would help strengthen our programs. (New courses that you would recommend and courses that you did not gain much from)

____________________________________________________________________
____________________________________________________________________
____________________________________________________________________
____________________________________________________________________
____________________________________________________________________

88
VI. Career Opportunities

VII. Department Status
1. Infrastructure 
   (A) (B) (C) (D) (E)
2. Faculty 
   (A) (B) (C) (D) (E)
3. Repute at National level 
   (A) (B) (C) (D) (E)
4. Repute at international level 
   (A) (B) (C) (D) (E)

VIII. Alumni Information
1. Name (Optional)
2. Name of organization
3. Position in organization
4. Year of graduation
Proforma 8

Employer Survey

(To be filled in by Employer - after the completion of each academic year)
The purpose of this survey is to obtain employers' input on the quality of education University of Arid Agriculture, Rawalpindi is providing and to assess the quality of the academic program. The survey is with regard to University of________ graduates employed at your organization. We seek your help in completing this survey.

<table>
<thead>
<tr>
<th>A: Excellent</th>
<th>B: Very good</th>
<th>C: Good</th>
<th>D: Fair</th>
<th>E: Poor</th>
</tr>
</thead>
</table>

I. Knowledge.

1. Math, Science, Humanities and professional discipline, (if applicable)  
   \[(A) \quad (B) \quad (C) \quad (D) \quad (E)\]
2. Problem formulation and solving skills  
   \[(A) \quad (B) \quad (C) \quad (D) \quad (E)\]
3. Collecting and analyzing appropriate data  
   \[(A) \quad (B) \quad (C) \quad (D) \quad (E)\]
4. Ability to link theory to Practice  
   \[(A) \quad (B) \quad (C) \quad (D) \quad (E)\]
5. Ability to design a system component or process  
   \[(A) \quad (B) \quad (C) \quad (D) \quad (E)\]
6. Computer knowledge.  
   \[(A) \quad (B) \quad (C) \quad (D) \quad (E)\]

II. Communication Skills:

1. Oral communication  
   \[(A) \quad (B) \quad (C) \quad (D) \quad (E)\]
2. Report writing  
   \[(A) \quad (B) \quad (C) \quad (D) \quad (E)\]
3. Presentation skills  
   \[(A) \quad (B) \quad (C) \quad (D) \quad (E)\]

III. Interpersonal Skills:

1. Ability to work in teams  
   \[(A) \quad (B) \quad (C) \quad (D) \quad (E)\]
2. Leadership  
   \[(A) \quad (B) \quad (C) \quad (D) \quad (E)\]
3. Independent thinking  
   \[(A) \quad (B) \quad (C) \quad (D) \quad (E)\]
4. Motivation  
   \[(A) \quad (B) \quad (C) \quad (D) \quad (E)\]
5. Reliability  
   \[(A) \quad (B) \quad (C) \quad (D) \quad (E)\]
6. Appreciation of ethical values  
   \[(A) \quad (B) \quad (C) \quad (D) \quad (E)\]

IV. Work skills:

1. Time management skills  
   \[(A) \quad (B) \quad (C) \quad (D) \quad (E)\]
2. Judgment  
   \[(A) \quad (B) \quad (C) \quad (D) \quad (E)\]
3. Discipline  
   \[(A) \quad (B) \quad (C) \quad (D) \quad (E)\]
V. General Comments

Please make any additional comments or suggestions, which you think would help strengthen our programs for the preparation of graduates who will enter your field. Did you know as to what to expect from graduates?

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

VI. Information About Organization

1. Organization Name_____________________________________________________
2. Type of Business_____________________________________________________
3. Number of Graduates (specify the program) in your Organization:
# Faculty Resume

<table>
<thead>
<tr>
<th>Name</th>
<th></th>
</tr>
</thead>
</table>

## Personal

- "May include address(s) and phone number(s) and other personal information that the candidate feels is pertinent."

## Experience

- "List current appointment first, each entry as follows:
  
  Date, Title, Institution."

## Honor and Awards

- "List honors or awards for scholarship or professional activity."

## Memberships

- "List memberships in professional and learned societies, indicating offices held, committees, or other specific assignments."

## Graduate Students/Psodocs/Undergraduate Students/Honour Students

<table>
<thead>
<tr>
<th>Years</th>
<th>Degree</th>
<th>Name</th>
</tr>
</thead>
</table>

- "List supervision of graduate students, postdocs and undergraduate honors theses showing:

  Show other information as appropriate and list membership on graduate degree committees."

## Service Activity

- "List University and public service activities."
<table>
<thead>
<tr>
<th>Brief Statement of Research Interest</th>
<th>May be as brief as a sentence or contain additional details up to one page in length.</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Publications</th>
<th>List publications in standard bibliographic format with earliest date first.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>* Manuscripts accepted for publication should be included under appropriate category as “in press;”</td>
</tr>
<tr>
<td></td>
<td>* Segment the list under the following standard headings:</td>
</tr>
<tr>
<td></td>
<td>* Articles published by refereed journals.</td>
</tr>
<tr>
<td></td>
<td>* Books.</td>
</tr>
<tr>
<td></td>
<td>* Scholarly and/or creative activity published through a refereed electronic venue.</td>
</tr>
<tr>
<td></td>
<td>* Contribution to edited volumes.</td>
</tr>
<tr>
<td></td>
<td>* Papers published in refereed conference proceedings.</td>
</tr>
<tr>
<td></td>
<td>* Paper or extended abstracts published in conference proceedings (refereed on the basis of abstract)</td>
</tr>
<tr>
<td></td>
<td>* Articles published in popular press.</td>
</tr>
<tr>
<td></td>
<td>* Articles appearing in in-house organs.</td>
</tr>
<tr>
<td></td>
<td>* Research reports submitted to sponsors.</td>
</tr>
<tr>
<td></td>
<td>* Articles published in non-refereed journals.</td>
</tr>
<tr>
<td></td>
<td>* Manuscripts submitted for publication (include where and when submitted).</td>
</tr>
</tbody>
</table>

| Research Grants and Contracts.       | Entries should include:                                                      |
|                                      | Date       Title                   Agency / Organization                  |
|                                      | Total Award Amount                                                               |
|                                      | Segment the list under following headings:                                     |
|                                      | * Completed                                                                |
|                                      | * Funded and in progress                                                      |
|                                      | * In review                                                                |

| Other Research or Creative Accomplishments | List patents, software, new products developed, etc. |

| Selected Professional Presentations | 
Proforma 10

Teacher Evaluation Form
(To be filled by the student)

Course Title and Number: ________________________________
Name of Instructor: ________________________________ Semester ____________________
Department: ________________________________ Degree ____________________

Use the scale to answer the following questions below and make comments

A: Strongly Agree  B: Agree  C: Uncertain  D: Disagree  E: Strongly Disagree

<table>
<thead>
<tr>
<th>Instructor:</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The Instructor is prepared for each class</td>
<td>A</td>
<td>B</td>
<td>C</td>
<td>D</td>
<td>E</td>
</tr>
<tr>
<td>2. The Instructor demonstrates knowledge of the subject</td>
<td>A</td>
<td>B</td>
<td>C</td>
<td>D</td>
<td>E</td>
</tr>
<tr>
<td>3. The Instructor has completed the whole course</td>
<td>A</td>
<td>B</td>
<td>C</td>
<td>D</td>
<td>E</td>
</tr>
<tr>
<td>4. The Instructor provides additional material apart from the textbook</td>
<td>A</td>
<td>B</td>
<td>C</td>
<td>D</td>
<td>E</td>
</tr>
<tr>
<td>5. The Instructor gives citations regarding current situations with</td>
<td>A</td>
<td>B</td>
<td>C</td>
<td>D</td>
<td>E</td>
</tr>
<tr>
<td>reference to Pakistani context</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. The Instructor communicates the subject matter effectively</td>
<td>A</td>
<td>B</td>
<td>C</td>
<td>D</td>
<td>E</td>
</tr>
<tr>
<td>7. The Instructor shows respect towards students and encourages</td>
<td>A</td>
<td>B</td>
<td>C</td>
<td>D</td>
<td>E</td>
</tr>
<tr>
<td>class participation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. The Instructor maintains an environment that is conducive to</td>
<td>A</td>
<td>B</td>
<td>C</td>
<td>D</td>
<td>E</td>
</tr>
<tr>
<td>learning</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. The Instructor arrives on time</td>
<td>A</td>
<td>B</td>
<td>C</td>
<td>D</td>
<td>E</td>
</tr>
<tr>
<td>10. The Instructor leaves on time</td>
<td>A</td>
<td>B</td>
<td>C</td>
<td>D</td>
<td>E</td>
</tr>
<tr>
<td>11. The Instructor is fair in examination</td>
<td>A</td>
<td>B</td>
<td>C</td>
<td>D</td>
<td>E</td>
</tr>
<tr>
<td>12. The Instructor returns the graded scripts etc. in a reasonable</td>
<td>A</td>
<td>B</td>
<td>C</td>
<td>D</td>
<td>E</td>
</tr>
<tr>
<td>amount of time</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13. The Instructor was available during the specified office hours and</td>
<td>A</td>
<td>B</td>
<td>C</td>
<td>D</td>
<td>E</td>
</tr>
<tr>
<td>for after class consultations</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14. Course:</td>
<td>A</td>
<td>B</td>
<td>C</td>
<td>D</td>
<td>E</td>
</tr>
<tr>
<td>15. The Subject matter presented in the course has increased your</td>
<td>A</td>
<td>B</td>
<td>C</td>
<td>D</td>
<td>E</td>
</tr>
<tr>
<td>knowledge of the subject</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16. The syllabus clearly states course objectives requirements,</td>
<td>A</td>
<td>B</td>
<td>C</td>
<td>D</td>
<td>E</td>
</tr>
<tr>
<td>procedures and grading criteria</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17. The course integrates theoretical course concepts with real-world</td>
<td>A</td>
<td>B</td>
<td>C</td>
<td>D</td>
<td>E</td>
</tr>
<tr>
<td>applications</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18. The assignments and exams covered the materials presented in</td>
<td>A</td>
<td>B</td>
<td>C</td>
<td>D</td>
<td>E</td>
</tr>
<tr>
<td>the course</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19. The course material is modern and updated</td>
<td>A</td>
<td>B</td>
<td>C</td>
<td>D</td>
<td>E</td>
</tr>
</tbody>
</table>
Comments:
Instructor:________________________________________
_________________________________________________
_________________________________________________
_________________________________________________
_________________________________________________
_________________________________________________
_________________________________________________
_________________________________________________
_________________________________________________

Course:__________________________________________
_________________________________________________
_________________________________________________
_________________________________________________
_________________________________________________
_________________________________________________
_________________________________________________
_________________________________________________
# Resume of Faculty Members

## Faculty Resume-I

<table>
<thead>
<tr>
<th>Name</th>
<th>Prof. Dr. Tariq Mukhtar</th>
</tr>
</thead>
</table>

### Personal

*May include address(s) and phone number(s) and other personal information that the candidate feels is pertinent.*

### Present Position & Address:

Professor & Chairman  
Department of Plant Pathology  
Faculty of Crop & Food Sciences  
PMAS Arid Agriculture University  
Rawalpindi-46300  
**Telephone:** Office: 051-9292123  
Fax: -  
e. mail: drtmukhtar@uaar.edu.pk

### Experience

List current appointment first, each entry as follows:

<table>
<thead>
<tr>
<th>Date</th>
<th>From</th>
<th>To</th>
<th>Title</th>
<th>Institution</th>
</tr>
</thead>
</table>
|           | 27-06-2014 | To-date | Professor/Chairman     | Department of Plant Pathology  
Faculty of Crop and Food Sciences  
PMAS- Arid Agriculture University, Rawalpindi |
|           | 04-11-2006 | 26-06-2014 | Associate Professor | -Do-  |
|           | 06-10-2006 | 03-11-2006 | Assistant Professor      | -Do-  |
|           | 30-05-1991 | 05-10-2006 | Agricultural Officer   | Agriculture, Pest Warning & Quality Control of Pesticides (Plant Protection) |

### Honor and Awards

List honors or awards for scholarship or professional activity.

**Research Productivity Award-2014**

### Memberships

*List memberships in professional and learned Societies, indicating offices held committees, or other specific assignments.*

a) Zoological Society of Pakistan (ZSP)  
b) Pakistan Society of Nematologists (PSN)  
c) Pakistan Phytopathological Society (PPS) *(Joint Secretary)*  
d) Pakistan Botanical Society (PBS)  
e) Myco-Phytopathological Society of Pakistan (MYCOPS)  
f) Weed Science Society of Pakistan (WSSP)
g) Pakistan Association for the Advancement of Science (PAAS)

<table>
<thead>
<tr>
<th>Year</th>
<th>Degree</th>
<th>Name</th>
<th>Contributed as</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>M.Sc. Hons</td>
<td>Sana Nazir</td>
<td>Supervisor</td>
</tr>
<tr>
<td>2013</td>
<td>M.Sc. Hons</td>
<td>Nasira Perveen</td>
<td>Supervisor</td>
</tr>
<tr>
<td>2014</td>
<td>M.Sc. Hons</td>
<td>Muneeba Arooj</td>
<td>Supervisor</td>
</tr>
<tr>
<td>2014</td>
<td>M.Sc. Hons</td>
<td>Muhammad Saeed</td>
<td>Supervisor</td>
</tr>
<tr>
<td>2014</td>
<td>M.Sc. Hons</td>
<td>Waqar-ul-Amin</td>
<td>Supervisor</td>
</tr>
<tr>
<td>2010</td>
<td>Ph.D.</td>
<td>Umer Iqbal</td>
<td>Supervisor</td>
</tr>
<tr>
<td>2011</td>
<td>Ph.D.</td>
<td>M. Arshad Hussain</td>
<td>Supervisor</td>
</tr>
<tr>
<td>2012</td>
<td>Ph.D.</td>
<td>M. Zameer Kayani</td>
<td>Supervisor</td>
</tr>
</tbody>
</table>

**Service Activity**

- Served as technical advisor (Plant Pathology) of selection boards of
  - Institute of Agricultural Sciences, Punjab University, Lahore
  - The Islamia University, Bahawalpur
  - Sargodha University, Sargodha
  - The University of Poonch, Rawalakot, AJK
- Member Academic Council, Pir Mehr Ali Shah Arid Agriculture University, Rawalpindi (PMAS-AAUR).
- Member Faculty Board, Faculty of Crop and Food Sciences, PMAS-AAUR.
- Member Board of Studies, Department of Plant Pathology, PMAS-AAUR.
- Member Self Assessment Team, Department of Plant Pathology, PMAS-AAUR.
- Member Gown Committee, PMAS-AAUR.
- Member Computer Management System (CMS), Department of Plant Pathology, PMAS-AAUR.
- Member Management Team, Hydroponic System, PMAS-AAUR.
- Member Board of Studies, Department of Plant Pathology, Bahauddin University, Multan (05-11-2015 to 04-11-2015).
- Member Board of Studies, Department of Plant Pathology, The University of Poonch, Rawalakot.
- Member Board of Studies, National Agriculture Research Council, Islamabad.

**Brief Statement of Research Interest**

May be as brief as a sentence or contain additional details up to one page in length.

My interests are in applied and basic research in Plant Pathology. My basic research efforts are on the identification of plant pathogenic bacteria and nematodes by using conventional, biochemical and molecular approaches. Pathogens of interest include root-knot nematodes, citrus nematode, wheat seed gall nematode, *Ralstonia solanacearum*, *Macrophomina phaseolina*, *Ceratocystis* spp.

My applied interests have focused on managing diseases of various crops particularly vegetable crops using Integrated Management Practices. My efforts have focused on the numerous disease management practices including resistance, cultural practices, and chemical and non-chemical methods of disease control. Crops which I have had considerable experience with include numerous vegetables (particularly cucumber, tomato, okra, egg plant, potato, chili and cucurbits), fruit (apple, peach, mango, citrus, plum), and filed crops (wheat, cotton and rice).

**Publications**

List publications in standard bibliographic format with earliest date first.
- Manuscripts accepted for publication should be included under appropriate category as “in press;”
- Segment the list under the following standard headings:
  - Articles published by refereed journals.
  - Books.
  - Scholarly and / or creative activity published through a refereed electronic venue.
  - Contribution to edited volumes.
  - Papers published in refereed conference proceedings.
  - Paper or extended abstracts published in conference proceedings. (refereed on the basis of abstract)
  - Articles published in popular press.
  - Articles appearing in in-house organs.
  - Research reports submitted to sponsors.
  - Articles published in non-refereed journals.
  - Manuscripts submitted for publication. (include where and when submitted).

**Articles published by refereed journals**


**Books**

**Papers published in refereed conference proceedings:**


### Research Grants and Contracts.

Entries should include:

<table>
<thead>
<tr>
<th>Date</th>
<th>Title</th>
<th>Agency / Organization</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Award Amount</td>
<td></td>
</tr>
</tbody>
</table>

Segment the list under following headings:

- Completed
- Funded and in progress
- In review

<table>
<thead>
<tr>
<th>Sr #</th>
<th>Name of project</th>
<th>Funding Agency</th>
<th>Amount in Rs. M</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Distribution and Management of Root-knot nematodes</td>
<td>Endowment Fund, UAF</td>
<td>2.222</td>
</tr>
<tr>
<td>2</td>
<td>Genetic diversity and phylotyping of <em>Ralstonia solanacearum</em> strains causing bacterial wilt of chilies in major chili growing areas of Pakistan</td>
<td>Higher Education Commission of Pakistan</td>
<td>5.347</td>
</tr>
<tr>
<td>3</td>
<td>Nematodes infecting temperate fruits in Pakistan and their management</td>
<td>Pakistan Science Foundation</td>
<td>5.246</td>
</tr>
</tbody>
</table>

### Other Research or Creative Accomplishments

List patents, software, new products developed, etc.

### Selected Professional Presentations
# Resume of Faculty Members

## Faculty Resume-2

**Name**

**Prof. Dr. M. Inam-ul-Haq**

**Personal**

*May include address(s) and phone number(s) and other personal information that the candidate feels is pertinent.*

**Present Position & Address:**

Professor  
Department of Plant Pathology  
Faculty of crop & food sciences  
PMAS Arid Agriculture University  
Rawalpindi-46300

**Telephone:** Office: 051-92  
Fax:  
E-mail: dr.inam@uaar.edu.pk

## Experience

List current appointment first, each entry as follows:

**Date, Title, Institution.**

<table>
<thead>
<tr>
<th>From</th>
<th>To</th>
<th>Title</th>
<th>Institution</th>
</tr>
</thead>
</table>
| 03-03-2008 | To-date  | Professor                    | Department of Plant Pathology,  
Faculty of Food and Crop Sciences,  
PMAS- Arid Agriculture University, Rawalpindi |
| 28-01-2011 | 11-12-2013 | Director,  
Advanced Studies  | Directorate of Advance Studies  
PMAS- Arid Agriculture University, Rawalpindi |
| 27-12-2013 | 27-12-2014 | Manager,  
Business Incubation Centre | ORIC,  
PMAS- Arid Agriculture University, Rawalpindi |
| 23-09-2008 | 02-03-2015 | Associate Professor | Department of Plant Pathology,  
Faculty of Food and Crop Sciences,  
PMAS- Arid Agriculture University, Rawalpindi |
| 23-12-2006 | 22-09-2008 | Associate Professor | Department of Plant Pathology,  
Faculty of Food and Crop Sciences,  
PMAS- Arid Agriculture University, Rawalpindi |
| 23-10-2000 | 22-12-2006 | Assistant Professor | Department of Plant Pathology,  
Faculty of Agriculture, University of Agriculture Faisalabad |
| 27-2-1992  | 22-10-2000 | Lecturer                    | Department of Plant Pathology,  
Faculty of Agriculture, University of Agriculture Faisalabad |

## Honor and Awards

List honors or awards for scholarship or professional activity.

i)  

**Memberships**

List memberships in professional and learned Societies, indicating offices held, committees, or other specific assignments.
i) Life member of Pakistan Phytopathological Society
ii) Life member of Pakistan Botanical Society
iii) Life member of Asian PGPR Society
iv) Reviewer: Canadian Journal of Microbiology
v) Reviewer: Pakistan Journal of Agricultural Sciences

<table>
<thead>
<tr>
<th>Graduate Students</th>
<th>Postdocs</th>
<th>Undergraduate Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>Honour Students</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Years</th>
<th>Degree</th>
<th>Name</th>
<th>Contributed as</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>M.Sc. (Hon)</td>
<td>Adeela Altaf</td>
<td>Supervisor</td>
</tr>
<tr>
<td>2014</td>
<td>M.Sc. (Hon)</td>
<td>Muhammad Sufiyan</td>
<td>Supervisor</td>
</tr>
<tr>
<td>2013</td>
<td>M.Sc. (Hon)</td>
<td>Shagufta Bibi</td>
<td>Supervisor</td>
</tr>
<tr>
<td>2013</td>
<td>M.Sc. (Hon)</td>
<td>Sundas Shakoor</td>
<td>Supervisor</td>
</tr>
<tr>
<td>2012</td>
<td>M.Sc. (Hon)</td>
<td>Farooq Azam</td>
<td>Supervisor</td>
</tr>
<tr>
<td>2012</td>
<td>M.Sc. (Hon)</td>
<td>Muhammad Nasir</td>
<td>Supervisor</td>
</tr>
<tr>
<td>2012</td>
<td>M.Sc. (Hon)</td>
<td>Saima Sadiq</td>
<td>Supervisor</td>
</tr>
</tbody>
</table>

Service Activity
List University and public service activities.
- Teaching courses to M.Sc., M. Phil. and Ph.D. Student
- Supervision of Research Theses of M.Sc., M. Phil. & Ph.D. students
- Development and Execution of donor funded Research & Development Projects.
- Management of the Department of Plant Pathology

Brief Statement of Research Interest
May be as brief as a sentence or contain additional details up to one page in length.
- Bacteriology and Biological Control

Publications
List publications in standard bibliographic format with earliest date first.
- Manuscripts accepted for publication should be included under appropriate category as “in press;”
- Segment the list under the following standard headings:
  - Articles published by refereed journals.
  - Books.
  - Scholarly and / or creative activity published through a refereed electronic venue.
  - Contribution to edited volumes.
  - Papers published in refereed conference proceedings.
  - Paper or extended abstracts published in conference proceedings. (refereed on the basis of abstract)
  - Articles published in popular press.
  - Articles appearing in in-house organs.
  - Research reports submitted to sponsors.
  - Articles published in non-refereed journals.
  - Manuscripts submitted for publication. (include where and when submitted).

Articles published by refereed journals


**Books**

**Papers published in refereed conference proceedings:**


**ABSTRACTS (Papers Presented in Conferences)**

**RESEARCH/TECHNICAL REPORTS (unpublished)**

**POPULAR ARTICLES/BOOKLETS**


<table>
<thead>
<tr>
<th>Research Grants and Contracts.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entries should include:</td>
</tr>
<tr>
<td>Date  Title Agency / Organization</td>
</tr>
</tbody>
</table>

Segment the list under following headings:

Completed

1. Endowment Fund UAF: Rhizobacterial Formulations Application Technology for the Control of major Pathogenic root infecting fungi in chickpea for sustainable Crop Production”.

2. HEC project: "Surveillance and pathogen characterization of bacterial canker of stone fruits using biochemical and molecular methods and its biomanagement".

3. PARB funded Project: “Development of Bio-pesticide for the Control of Soil-borne Diseases of Tomatoes and Chilies caused by *Pythium* and *Phytophthora spp.*”


Funded and in progress

6. PSF funded Project entitled “Utilization of Plant Growth Promoting Rhizobacteria for the Induction of Systemic Resistance in Potato Seed against Bacterial Rot and Wilt Diseases”.

7. Endowment Fund UAF: Rhizobacterial Formulations Application Technology for the Control of major Pathogenic root infecting fungi in chickpea for sustainable Crop Production”.

8. HEC project: "Surveillance and pathogen characterization of bacterial canker of stone fruits using biochemical and molecular methods and its biomanagement”.

9. PARB funded Project: “Development of Bio-pesticide for the Control of Soil-borne Diseases of Tomatoes and Chilies caused by *Pythium* and *Phytophthora spp.*”
In review

1. One project is in pipeline with the foreign professor from University of Reading. Link is continued here in PMAS-Arid Agriculture University Rawalpindi (Copy of Memorandum of Linkage is enclosed).

<table>
<thead>
<tr>
<th>Other Research or Creative Accomplishments</th>
<th>List patents, software, new products developed, etc.</th>
</tr>
</thead>
</table>

**Selected Professional Presentations**

---

Annexure -I

## Resume of Faculty Members

### Faculty Resume-3

<table>
<thead>
<tr>
<th>Name</th>
<th>Dr. Muhammad Ashfaq</th>
</tr>
</thead>
</table>

**Personal**

May include address(s) and phone number(s) and other personal information that the candidate feels is pertinent.

**Present Position & Address:**
Associate Professor
Department of Plant Pathology
Faculty of crop & food sciences
PMAS Arid Agriculture University
Rawalpindi-46300
**Telephone:** Office: +92 051 9292123
e. mail: mashfaq@uaar.edu.pk

**Experience**
List current appointment first, each entry as follows:

**Date, Title, Institution.**

<table>
<thead>
<tr>
<th>From</th>
<th>Date</th>
<th>To</th>
<th>Title</th>
<th>Institution</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-7-2004</td>
<td>May, 2009 to May, 2010</td>
<td>To-date</td>
<td><strong>Assistant Professor</strong></td>
<td>Teaching and Research experience Visiting Scientist at SCRI/JHI, Dundee, UK, from May</td>
</tr>
</tbody>
</table>

**Honor and Awards**
List honors or awards for scholarship or professional activity.

i) Promotion to Assistant professor, 2010

ii) *Visiting Scientist, Scottish Crop Research Institute/James Hutton research Institute, Dundee, Scotland, UK, 2009-2010.*

iii) HEC PhD Approved Supervisor

v) Subject editor in Plant Virology of Pakistan Journal of Phytopathology (Pak. J. Phytopathol.,)

vi) Research supervision of PhD, M.Sc. (Hons.) and B.Sc. (Hons.) students.

iii) precious services and big contribution to farmer community through IPM-FFS approach”.

Memberships
List memberships in professional and learned Societies, indicating offices held, committees, or other specific assignments.

vi) Member of Editorial Board of Austin Journal of Plant Biology (AJPB).

vii) Member of Editorial Board of Asian Journal of Agriculture & Biology (AJAB).

Graduate Students Postdocs Undergraduate Students

Honour Students

List supervision of graduate students, postdocs and undergraduate honors theses showing:

<table>
<thead>
<tr>
<th>Years</th>
<th>Degree</th>
<th>Name</th>
<th>Contributed as</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>M.Sc.(Hon's)</td>
<td>Anam Saleem</td>
<td>Supervisor</td>
</tr>
<tr>
<td>2013</td>
<td>M.Sc.(Hon's)</td>
<td>M.Zeeshan</td>
<td>Supervisor</td>
</tr>
<tr>
<td>2013</td>
<td>M.Sc.(Hon)</td>
<td>Sehrish Saba</td>
<td>Supervisor</td>
</tr>
<tr>
<td>2014</td>
<td>M.Sc.(Hon's)</td>
<td>Zargham Abbas</td>
<td>Supervisor</td>
</tr>
</tbody>
</table>

Service Activity
List University and public service activities.
- Teaching courses to M.Sc (Hons) and Ph.D. student
- Supervision of Research Theses of M.Sc., M. Phil. & Ph.D. students

Brief Statement of Research Interest
May be as brief as a sentence or contain additional details up to one page in length.

- Molecular Plant Virology, Functional study of viral genes,
  Development of transgenic plants resistant to virus infection, Study of virus-encoded silencing suppressor proteins, Virus-Plant interactions, Biochemistry and Physiology of Viral Diseased Plants, Epidemiology of Plant Viruses, Integrated Disease Management.

Faculty Resume-4

Name: Dr. Gulshan Irhad

Personal
Organization (main): PMAS Arid Agriculture University Rawalpindi
Phone: +92 51 92 90 230
Mob: +92 333 593 8344
Email: gulshanirshad@gmail.com
Gulsha.irshad@uaar.edu.pk

Experience
<table>
<thead>
<tr>
<th>Date</th>
<th>Title</th>
<th>Institution</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td>Lecturar</td>
<td>PMAS AAUR</td>
</tr>
<tr>
<td>2014</td>
<td>Assisstant Professor</td>
<td>PMAS AAUR</td>
</tr>
</tbody>
</table>

Honor and Awards
Lecturer (Plant Pathology) PMAS-AAUR, Pakistan 2004
Memberships

Pakistan Phytopathological society (life member)
Pakistan Botanical society (life member)

Brief Statement of Research Interest

Aero mycology, Fungal Taxonomy, Seed Pathology, Wind Borne Diseases, Post Harvest Pathology, Beneficial Microorganisms.

Publications

Articles published by refereed journals


Phytopathology. 26(2). 241-246.

Scholarly and / or creative activity


2. Study report on population of selected mammals and birds of Machiara National Park. PAMP-MNP, AJK Fisheries and Wildlife Department, Muzaffarabad AJK. 2006.


Research Grants and Contracts.

1. Screening of substrate mass production of biological control agent.  
   (PMAS AAUR) 2008-2009

2. Induction of systemic resistance through Rhizobacteria in tomato.  
   (PMAS AAUR) 2010-2011

3. Impact of aeromycoflora –dynamics on prevailing plant flora and human allergens. (submitted to Pakistan science foundation)

Other Research or Creative Accomplishments

Nil

Selected Professional Presentations Nil

Faculty Resume-5

Name
Dr. Farah NAZ

Personal
Department of Plant Pathology  
University of Arid Agriculture, Rawalpindi, Pakistan  
Ph: +92-51-9062626,  
Cell +92-300-5075319  
Email: nazfrh@yahoo.co.uk  
farahnaz@uaar.edu.pk

Experience

<table>
<thead>
<tr>
<th>Date, Title, Institution</th>
<th>Date, Title, Institution</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-4-2010 to date Assistant Professor PMAS AAUR</td>
<td>7-5-2007 - 31-3-2010 Lecturer PMAS AAUR</td>
</tr>
<tr>
<td>1-11-2003 - 31-10-2006 Research Associate PSF/PMAS UAAR Project No 69</td>
<td>7-1-2000 - 31-10-2000 Lecturer (Biology) Rawalpindi</td>
</tr>
</tbody>
</table>

Honor and Awards

- -

Memberships

- Member of “American phytopathological Society”
- Life Member, “Pakistan Phytopathological Society”.
- Life Member, “Pakistan Botanical Society”.
- Councilor, Pakistan Phyto Pathological Society Pakistan 2010-11
- Councilor, Pakistan Phyto Pathological Society Pakistan 2016-17
### Supervision of Students

<table>
<thead>
<tr>
<th>Years</th>
<th>Degree</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>P.hD.</td>
<td>Gulshan Irshad</td>
</tr>
<tr>
<td>2012</td>
<td>MSc (Hons)</td>
<td>Sania Shoukat</td>
</tr>
<tr>
<td>2013</td>
<td>MSc (Hons)</td>
<td>Sidra Hafeez</td>
</tr>
<tr>
<td>2014</td>
<td>MSc (Hons)</td>
<td>Aliya Tariq</td>
</tr>
<tr>
<td>2014</td>
<td>MSc (Hons)</td>
<td>Alveena Mumtaz</td>
</tr>
</tbody>
</table>

#### Service Activity
- Teaching courses to MSc.(Hons) and Ph.D. Students
- Supervision of Research Theses of the MSc.(Hons)/Ph.D. students
- Conducting Research Projects funded by HEC and PMAS-AAUR.

#### Brief Statement of Research Interest
- Fungal Molecular Biology,
- fungal plant pathology,
- plant disease diagnosis,
- genetic variation in plant pathogenic fungi
- on-farm participatory research,
- integrated disease management,

#### Publications

**a) Articles published by refereed journals:**


<table>
<thead>
<tr>
<th>Research Grants and Contracts.</th>
<th>a) Completed Projects</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Inhibition of <em>Rhizoctonia solani</em> with Isothiocyanates produced by Brassicaceae Species ” sponsored by PMAS UAAR, (2009 -2010) (Completed)</td>
<td></td>
</tr>
<tr>
<td>2 &quot;Management of black scurf of potato&quot; sponsored By: Pakistan Science Foundation (PSF) (01/12/2003 - 11/30/2006) (Completed)</td>
<td></td>
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</tbody>
</table>
3. “Surveillance and Characterization of Pathogens Infecting Loquat in Pakistan”. sponsored By: Pakistan Science Foundation. PSF/NSLP/P-UAAR (501) Rs. 2.27 Million (10/03/2014 - (Ongoing)

4. Optimization of organic mushroom technology at Koont Farm (Chakwal); Income Generation and poverty alleviation through transfer technology. PARC – ALP Rs.3.19 Million

<table>
<thead>
<tr>
<th>members</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Member of “American phytopathological Society”</td>
</tr>
<tr>
<td>• Life Member, “Pakistan Phytopathological Society”.</td>
</tr>
<tr>
<td>• Life Member, “Pakistan Botanical Society”.</td>
</tr>
<tr>
<td>• Councilor, Pakistan Phyto Pathological Society Pakistan 2010-11</td>
</tr>
<tr>
<td>Councilor, Pakistan Phyto Pathological Society Pakistan 2016-17-</td>
</tr>
</tbody>
</table>

**Selected Professional Presentations**

- **Participated IN** “14 th National Training Course on “Modern Techniques in Biotechnology” April 18-22, 2016 at NIBGE, Faisalabad

- Oral Presentation 5th International and 14th National conference of Botany organized by Pakistan Botanical Society at University of Karachi, Karachi on 15-18 January 2016

- Oral Presentation in 5th International / 10th National Conference of *Pakistan Phytopathological Society*. Institute of Agricultural Sciences, University of the Punjab Lahore November 23-25, 2015

- Oral Presentation in **12th National and 3rd International Conference of Botany** Quaid-i- Azam University Islamabad (1/9/2012-3/9/2012)

- **Participated in** FSC & RD-NAPHIS “National training course in seed Mycology and Nematology” 16-19 June 2014at Islamabad.


- Oral Presentation in **12th National and 3rd International Conference of Botany** Quaid-i- Azam University Islamabad (1/9/2012-3/9/2012)

- Participated in International Conference of Plant Scientists organized by Pakistan Botanical Society held from 21-24th April 2007 in Faisalabad Agriculture University

• Attended National Training Course on Seed Virology Organized by FSC&RD / NAPHIS, Ministry of Food and Agriculture, Govt. of Pakistan, held from 22nd to 24th December 2008.

Resume of Faculty Members

Faculty Resume-6

<table>
<thead>
<tr>
<th>Name</th>
<th>Muhammad Usman Raja</th>
</tr>
</thead>
</table>
| **Personal**       | Department of Plant Pathology, PMAS-Arid Agriculture University Rawalpindi, Pakistan  
Faculty of Crop & Food science  
Off: Tel. +92 051 9292123  
Cell: +92 51 345 0538643  
Email: usman2012@uaar.edu.pk |

**Experience**
List current appointment first, each entry as follows:

**Date, Title, Institution.**

<table>
<thead>
<tr>
<th>From</th>
<th>To</th>
<th>Title</th>
<th>Institution</th>
</tr>
</thead>
<tbody>
<tr>
<td>06-11-2006</td>
<td>To-date</td>
<td>Assistant Professor</td>
<td>Department of Plant Pathology, PMAS-Arid Agriculture University Rawalpindi, Pakistan</td>
</tr>
<tr>
<td>24-11-2001</td>
<td>06-11-2006</td>
<td>Lecturer</td>
<td>. Department of Plant Pathology, PMAS-Arid Agriculture University Rawalpindi, Pakistan</td>
</tr>
</tbody>
</table>

**Honor and Awards**
List honors or awards for scholarship or professional activity.

i) Received outstanding student scholarship for pursuing M.Phil. degree.

**Memberships**
List memberships in professional and learned Societies, indicating offices held, committees, or other specific assignments.

i. Life member of Pakistan Society of Plant Pathology

ii. Life member of Pakistan Botanical society
Graduate Students
Postdocs
Undergraduate
Students

Honour Students

List supervision of graduate students, postdocs and undergraduate honors theses showing:

<table>
<thead>
<tr>
<th>Years</th>
<th>Degree</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>M.Sc.(Hon)</td>
<td>Komal Zafar</td>
</tr>
</tbody>
</table>

Show other information as appropriate and list membership on graduate degree committees.

Service Activity
List University and public service activities.
Teaching and Research
Major Area of Interest: Phytobacteriology, Plant Disease Resistance, Post Harvest diseases
Undergraduate and Post-graduate student advisor
Tutorship
Member of department team for quality control
Provide diagnostic and advisory services to farmers of peripheral area

Brief Statement of Research Interest
May be as brief as a sentence or contain additional details up to one page in length.

- Plant disease resistance
- Post- harvest disease management
- Phyto-bacteriology

Publications

Publications with Impact factor
Publications in peer reviewed journals:

Abstract

1. Raja, M.U. and Ali M.W. Screening of commercial PEA (*Pisum sativum* L.) varieties against *Pseudomona syringae pv pisi* through different pathogenicity assays. 5th International conference of Pakistan Phytopathology Society, November 23-25, 2015, Lahore


Research Grants and Contracts.
Control of post-harvest diseases of fruits and vegetables by unconventional methods (resistance inducers, botanical and antagonist) **Ongoing**
Annexure 13

Detailed Course Contents of Under Graduate Scheme of Studies Plant Pathology

PP-401 INTRODUCTION TO PLANT PATHOGENS  2(1-2)

Theory:
Types of Plant Pathogens, General taxonomy, characteristics, morphology, and ecology of Plant Pathogens (Fungi, Bacteria, Virus, Nematode, Phytoplasma, Higher Parasitic Plants).

Practicals
Preparation of media and isolation techniques for plant pathogens. Demonstration of various plant pathogens through slides, live specimens and their comparative study.

Books Recommended

Text:

Reference:
INTRODUCTION TO PLANT PATHOLOGY 3(2-2)

Theory:

Practicals:
Collection and preservation of diseased specimens, plant disease identification. Study of symptoms of plant diseases. Demonstration of equipments and machinery used in plant disease management.

Books Recommended:
Text:

Reference:

INTRODUCTORY MYCOLOGY 3(2-2)

Theory:
Introduction and importance of fungi, taxonomy, morphology, nutrition and reproduction of fungi with special reference to families and genera of agricultural and industrial importance.

Practicals:
Collection, isolation, preservation and identification of fungi important to agriculture; study of key morphological characters of fungi, the basis of classification of various groups of fungal pathogens.

**Books Recommended:**

**Text:**

**Reference:**

**PP-503 INTRODUCTORY PLANT NEMATOLOGY 3(2-2)**

**Theory:**
Introduction, history and importance of nematodes; taxonomy, morphology and biology of plant parasitic and soil inhabiting nematodes; plant-nematode relationship; distribution and means of spread; management of nematodes.

**Practicals:**
Sampling, extraction, staining and identification of nematodes from soil and infested plant materials; methods of maintenance and culturing of nematodes; use of nematicides and cultural practices for the management of nematode diseases of plants.

**Books Recommended:**

**Text**
Reference:

PP-505 INTRODUCTION TO PROKARYOTES 3(2-2)
Theory:
Introduction, history, taxonomy, morphology, structure, cultivation, growth, reproduction, metabolism, cultural characteristics, mode of infection and transmission of bacteria and mollecutes (phytoplasmas & spiroplasmas) and their management.

Practicals:
Isolation, purification, staining and preservation of plant pathogenic prokaryotes. Morphological, cultural and biochemical characteristics for identification of plant pathogenic prokaryotes.

Books Recommended:
Text:

**PP-507: INTRODUCTION TO PLANT VIRUSES 3(2-2)**

**Theory:**
Introduction, virus symptomatology; study of virus composition; morphology and structure; physiology of virus infected plants; virus transmission and movement; serology and serological methods, ecology, and management; study of specific virus diseases in Pakistan.

**Practicals:**
Study of symptoms and methods of transmission of important virus diseases. Identification of plant viruses by symptomatology, serology, indicator plants and host range.

**Books Recommended:**

**Text:**

**PP-509: BENEFICIAL MICROORGANISMS 3(2-2)**

**Theory:**
Morphology, classification and cultivation of edible fungi. Useful microorganisms of industrial importance; role of microorganisms in degradation of industrial products; production of industrial products; microorganisms as biological agents; mycorrhizae and their role in soil fertility and plant disease management.

**Practicals:**
Spawn production and cultivation of edible mushrooms. Identification of edible and poisonous mushrooms, isolation and identification of microorganisms from different agricultural and industrial wastes. Isolation and identification of mycorrhizal fungi. Demonstration of antagonism, competition and antibiosis.

Books Recommended:

Text

Reference:

PP-502: INTRODUCTION TO MOLECULAR PLANT PATHOLOGY 3(2-2)

Theory:
Introduction to molecular biology; Molecular biology and plant pathology; Macro molecules in Plant pathology, Proteins, Carbohydrates, Lipids, Terpenoids, Nucleotides, Nucleosides and their role; Structure of DNA, RNA; Genes and Gene expression, Protein synthesis, Chromosomes, Mitotic and meiotic behaviour of genes, DNA replication & repair mechanism. Mutagenesis and sequences.

Practical:
DNA isolation and amplification. Isolation of Protein; Visits to research labs with related facilities.
Books Recommended:

Text:

Reference:

PP-504: DISEASES OF FIELD CROPS 3(2-2)

Theory:
Detailed study of symptoms, etiology, nature and extent of losses, disease cycle, methods of perpetuation, epidemiology and control of major diseases of field crops particularly those prevalent in Pakistan such as: Wheat (rusts and smuts, bunts, powdery mildew, ear cockle, etc.) Maize (fungal and bacterial blights, stalk rot, smuts, etc.) Rice (blast, bakanae, blight) Cotton (boll rot, root rot, leaf curl, bacterial blights etc.) Sugarcane (red rot, whip smut, ratoon stunt etc.) Sorghum (smuts, blights) Tobacco (black shank, tobacco mosaic etc.) Oil Seed Crops for example Sunflower, Canola (charcoal rot, Alternaria blight, downy mildew) Chickpea (blight, wilt) Lentil (rust, blight, wilt and mosaic) Peanut (Cercospora, Alternaria leaf spots rust and wilt).
**Practicals:**
Field visits and identification of diseases on the basis of symptoms and isolation of the pathogens. Collection and preservation of diseased specimens; preparation of permanent mounts; crop loss assessment.

**Books Recommended:**

**Text:**

**Reference:**

**PP-506: DISEASES OF HORTICULTURAL CROPS 3(2-2)**

**Theory:**
Nature and extent of losses, disease cycle, methods of perpetuation and control of major diseases of fruits and vegetable crops such as:

- **Pome fruits** - scab, root rot, powdery mildew and fire blight
- **Stone fruits** - shot hole, brown rot, leaf curl, root rot, die-back and crown gall
- **Citrus** - withertip, root rot, Tristeza, citrus greening, canker
Mango -  malformation, anthracnose, powdery mildew, bacterial leaf spot, fruit rot, dieback and quick decline.

Banana-  finger tip rot and banana bunchy top.

Grapes -  downy and powdery mildew, fanleaf.

Solanaceous  Blights, wilts, scabs, black scurf, orobanche, collar

Vegetables  rot, powdery mildew, golden cyst, root knot and virus diseases.

Cucurbits  Downy and powdery mildew, mosaics, fruit rots and wilts

Crucifers  White rust, head rots and mosaics.

Legumes  Powdery mildew, mosaics and blights.

Onion  Downy mildew, purple blotch and root rots.

Garlic  Rust and charcoal rot.

Practicals: Identification of diseases on the basis of symptoms and isolation of pathogens. Field visits, collection and preservation of diseased specimens; preparation of permanent mounts, crop loss assessment.

Books Recommended:

Text:

Reference
2. Compendia of cucurbits, onion and garlic, potato, tomato and pea diseases. American Phytopathological Society, St. Paul, Minnesota, USA.
**Theory:**
Plant disease clinic; the concept and farmers expectations. Dealing with the clients – how to interact. Collection of specimens, their transport, handling in the laboratory and labeling, formulating and filling in proformas for record keeping and history. Equipment, glassware, chemicals and reagents for an ideal plant disease clinic. Diagnosis protocols. Additional knowledge of allied sciences required for plant pathologists working in plant disease clinic.

**Practicals:**
Collection of plant disease specimens and their identification. Developing recommendations and report preparation for the clients.

**Books Recommended:**

**Text:**

**Reference:**

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**PP-510 PLANT RESISTANCE TO DISEASES 3(2-2)**

**Theory:**
Importance of disease resistance in plants; resistance vs. susceptibility; Kinds & mechanisms of resistance; transgenic approaches for crop protection. Induced
systemic resistance through biocontrol options. Screening of germplasm for resistance by using different rating scales/parameters.

**Practicals:**
Preparation of inocula, inoculation techniques for various plant pathogens; demonstration of hypersensitive reaction, resistance and susceptibility: screening of germplasm in field and greenhouse against major plant pathogens disease assessment parameters.

**Books Recommended:**

**Text:**

5. Resistances and Susceptibility. John Wiley and Sons, Inc. New York, USA.

**Reference:**

Theory:
Understanding principles of avoidance, exclusion, eradication, protection, and immunization. Management of plant diseases by regulatory (quarantine and inspection), cultural (host eradication, crop rotation, sanitation, tissue culture etc), biological (host resistance, cross protection, interference, hyperparasitism etc), physical (heat treatment, sterilization, refrigeration and radiation etc.) and chemical (soil and seed treatment, foliar spray and post harvest application) methods; integrated disease management.

Practicals:
Acquaintance with equipment and machinery used for disease management. Calibration of equipment. Safety measures for disease managing chemicals; handling and application procedures; *Invitro* management of pathogens through biological, chemical and physical means.

Books Recommended:
Text:

Reference:

PP-603  RANGE AND FOREST PATHOLOGY  2(1-2)

Theory:
General introduction to forest and range ecosystem. Damage to forest plants due to abiotic factors. Specific fungi causing different diseases such as wood decay, discoloration, cankers and foliage diseases etc. Study of bacteria, viruses, nematodes and parasitic higher plants causing diseases of forest plants and their control.

Practicals:
Visits to different forest and range plantations of the country. Study of specific diseases of forest and shade trees based on symptoms and their control.

Books Recommended:
Text:

Reference:

PP-605  SEED & POST HARVEST PATHOLOGY  3(2-2)

Theory:
Morphology and anatomy of healthy and infected seed. Seed-borne diseases and their effect on seed germination. Histopathology of infected seed, seed transmission of pathogen, mechanism of infection. Effect of biotic & abiotic stresses and storage/transit conditions on shelf life of seed and perishables. Loss
estimation and Seed health testing. Mycotoxins, their hazards. Management of seed and post harvest diseases.

Practicals:
Seed health testing, different techniques of isolation and identification of microorganisms associated with seeds and their effect on germination. Collection and identification of biotic and abiotic diseases of perishables. Use of safe chemicals for management of seed and postharvest diseases.

Books Recommended:
Text:

Reference:
A workable project on one of the area of Plant Pathology in consultation of students will be designed. The students will be taught how to design a good research project. It will cover introduction, importance, objectives, materials and methods & results and discussions. The students will also be directed how to consult the various journals to collect and finally complete the literature.