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ARID AGRICULTURE UNIVERSITY RAWALPINDI

Self Assessment Report
DEPARTMENT OF PLANT PATHOLOGY
October, 2012 - October, 2014
B.sc (Hons)

Prepared by:

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Introduction

B.SC (Hons) program with the major discipline plant pathology was started in 1986. It has been offering two supporting/ minor courses since the beginning of the Barani Agricultural College in 1979. The college was raised 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- grading have been extraordinary. It has generated well-known Plant Pathologists, who are playing a important role at national and international level in different discipline.

The main objective of this program were to give information 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. In this programme to introduce the emerging issues of new and economically important plant diseases in the area. The disease management has been given vital importance in the programme. The department is committed in quality teaching to boost the professional skill of the students in plant protection so that they can keep with the tempo 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 provides the information about the complete list of items which is used in the laboratories. The information about students' support and advising is mentioned in the fourth criterion whereas the last fourth criteria give the information about process control, faculty features and institutional services 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

Disease has been an important role in the reduction of plant growth which is caused by the several microorganisms such as, bacteria, fungi, protozoa, and nematodes etc. About 20% of crop is damaged due to plant diseases in every year in all over the world. There is a need to control the pant disease by using of millions of kilograms of pesticides for treating seeds, fumigating soil, spraying plants or the post harvest treatments of fruits. These pesticides have not only beneficial aspects. There are some limitations by using these pesticides such as environmental pollution, change the biodiversity and microbe's resistance against the pesticides. A mission for plant pathology is to reduce food losses while improving food quality, and protect our environment. In current circumstances the world population is increasing gradually and on the other hand cultivated land, natural resources and our environment is decreasing at the same ratio, and becomes polluted. There is need for everyone to perform some work for controlling plant diseases effectively and safely. Therefore, the mission of programme of Plant Pathology is to carry quality education, carry out better-quality research and spread information for the improvement of agriculture, environment, to make sure self-sufficiency in quality food by decreasing quantitative as well as qualitative losses in crop yield 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 introduce the new techniques in the various fields of Plant Pathology viz. virology, bacteriology, mycology, nematology, disease diagnosis, pathogen detection and characterization, disease epidemiology and management.
2. To give the information of the students for the preparation of the research project on diseases of economic and national importance in the area.
3. To make stronger the discipline with combination of advanced knowledge and approaches of related subjects such as Molecular Plant Pathology.
4. To search new and upcoming problems in the field through *in vivo* and *in vitro* plant disease diagnosis understanding.
5. To incorporate the culture of research in teaching faculty and students.
6. To give confidence to the students in academics and research in Plant Pathology

Main elements of strategic plan to achieve mission and objectives

- Well developed teaching system is introduced which is based on experience and ideas gathered from world reviews, literature, innovations, events, symposia etc for the award of degrees.
- Designing and continuously updating the programmed involving major and minor subjects, specialized areas, internship programs and study tours.
- Preparation of under-graduate research projects and research reports.
- To make well prepared 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.
- To Develope a relationship with national and international research organizations for encouraging the research.

The assessment of program objectives through different criteria is presented in Table 1

Table 1 Program Objectives and their Assessment

S. #	Objective	How Measured	When Measured	Improvement Identified	Improvement made
1	To get better the field of plant pathology at aaur	On the basis of introduction, importance & impact of plant diseases in the area	On the basis Continuous activity	Teaching skill need to be improved	Modification and improvement in teaching methods like use of multimedia, posters
2	To provide information of educational and applied information to the under-graduate	Basic information and status of knowledge of students through entry tests and students feed back	At the time of admission or semester	Some basic courses need to be included in the curriculum	Modification of curriculum as per requirement
3	To facilitate the students in research/ internship	students feed back	Before start of research/ internship	Students to make presentations and reports	Presentations, seminars, communication skills development
4	incorporation of related fields	Through entry tests, interviews research interests	Subject/ courses attachment before start	Related subjects to be recommended for studies	development of knowledge and vision through web based technologies
5	Expectation of new teaching/ research able areas	Through surveys, monitoring of diseases and identity of priority problems	Continuous activity	New courses to be included in curriculum, research on new problems	Approval of new curriculum
6	To give confidence the students in academics and research in Plant Pathology	No. of research publications, research projects submitted & completed.	During the whole academic year	Use of advanced techniques in disease monitoring and evaluation	Research papers published in reputed journals; approval of projects; application of new DNA-based technique

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:

1. Recognition of major problems and their solution.
2. Communication through class presentations, oral discussions, writing review articles etc.
3. Use of new analytical techniques; such as immunological, molecular, DNA-based techniques
   and nano-technology for research project preparation.
4. Upgrading of knowledge and broadening of vision.
5. 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

		Objectives					
Outcomes		**1**	**2**	**3**	**4**	**5**	**6**
	1	++	+++	++	++	++	++
	2	+++	++	+++	+	++	++
	3	+++	++	++	++	++	++
	4	+++	++	+	++	++	++
	5	+	++	++	+	++	++

+ = satisfactory ++ = Moderately Satisfactory +++ = highly satisfactory

Programme Outcome Measurement

Evaluation of the performance of the most concerned with regard to achievement of the determined objectives; information was gathered from the target groups through proforma provided by the Quality Enhancement Cell of Pir Mehr Ali Shah, AridAgricultureUniversity, Rawalpindi. The prorformas were filled in by the respective class students, faculty memebrs, department alumni, and the graduates (previously passed out from the university) working in different organizations, research institutes, and agriculture departments in different positions at national level.

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. There were only seven teachers, Dr. Farah Naz, Dr.Abid riaz, Dr. Dr usman Raja, Mrs. Gulshan Irshad and Dr. M. Inam-ul-Haqin, Dr .M ashfaq and Dr.Tariq Mukhtar the departmentat the time of assessment thatare numbered1-7.Teachers were evaluated by the studentsat the end of each semester 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-4 is on the top scoring 90.81% followed by teacher 3, 2 and 1 respectively while teacher 5 is on the bottom securing 87.78% scores in fall Semesters (Fig.1). Where as in spring semesters, the overall performance of all the teachers was graded as very good teacher 4, however, was on top with 91 scoring followed by teacher 5 (Fig 2).

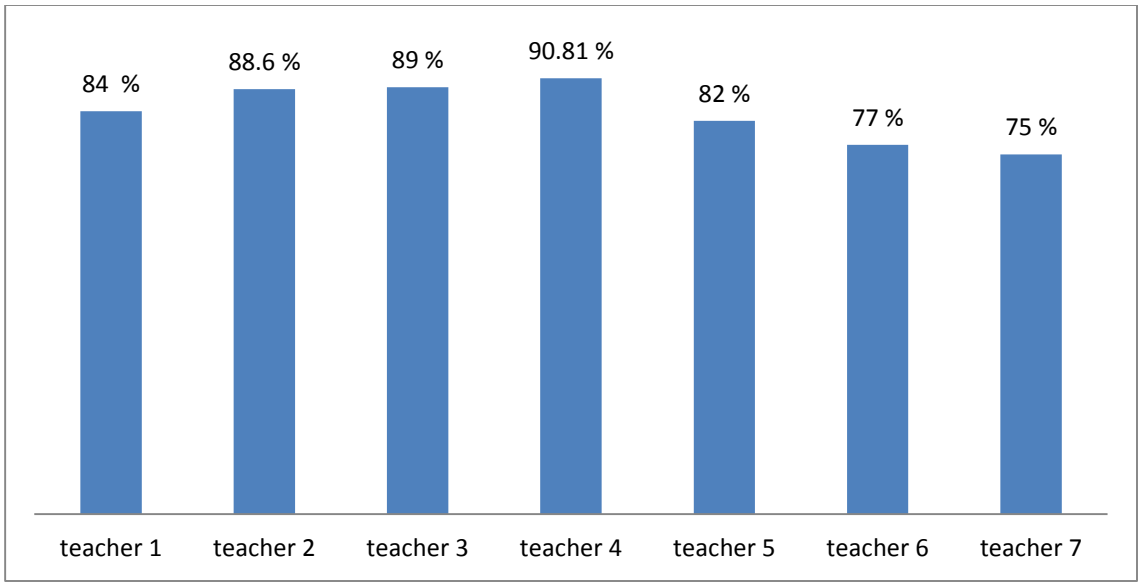


Fig. 1 Teacher Evaluation (Fall 2012-13& 2013-14)

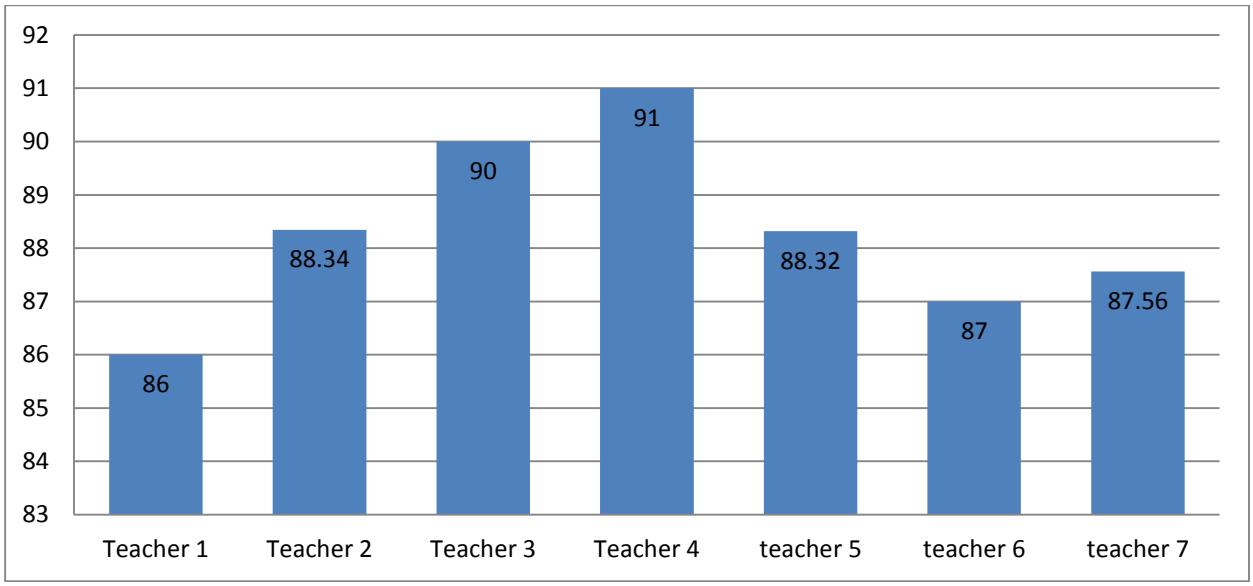


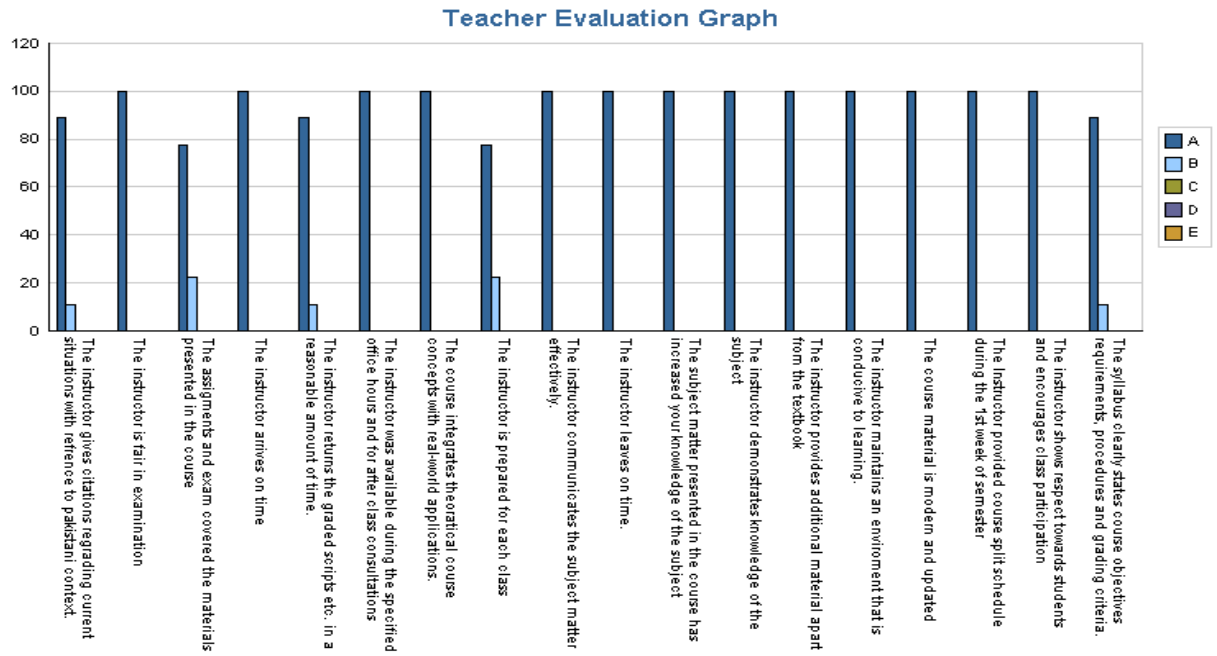
Fig.2Teacher Evaluation (spring, 2013, 14)

Detail of individual performance of each teacher is obvious from the Pie- Chart or graphically given ahead.

Pie Charts & Graphs Showing Evaluation of Teachers in Detail

Teacher 1 (PP-603: M)

According to the Assessment conducted against the course entitled as “Introductory Forest Pathology” offered in fall -13, 80-100% students were strongly agreed on statement while 10% trend as agreed about the rest of the queries asked.



General Comments of the Students about this Teacher

Weakness**:**

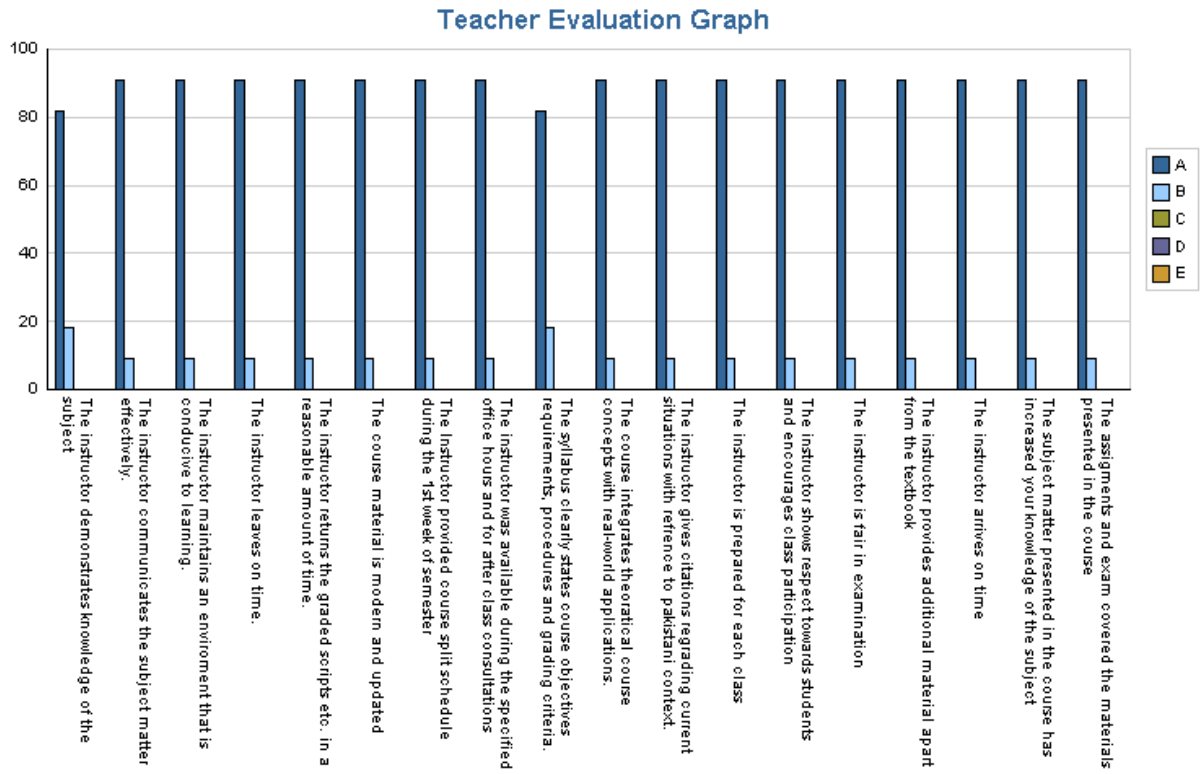
- Teacher should include modern concepts in his lectures.
- Some time he was not available for lectures and other teachers took our classes for him, which confused us.

Strengths**:**

- Teacher was good in behavior.
- Teacher was good in examination.

Teacher 1 (PP 608)

According to the Assessment conducted against the course entitled as “Introduction to Molecular Plant Pathology” offered in Spring-14, 70-90% students were strongly agreed about all the statement asked in Performa while 15-20% expressed their view as agreed. Less than 15% expressed their view as uncertain.



General Comments of the Students about this Teacher

<u>Teachers Evaluation (Proforma 10)</u>

Weaknesses:

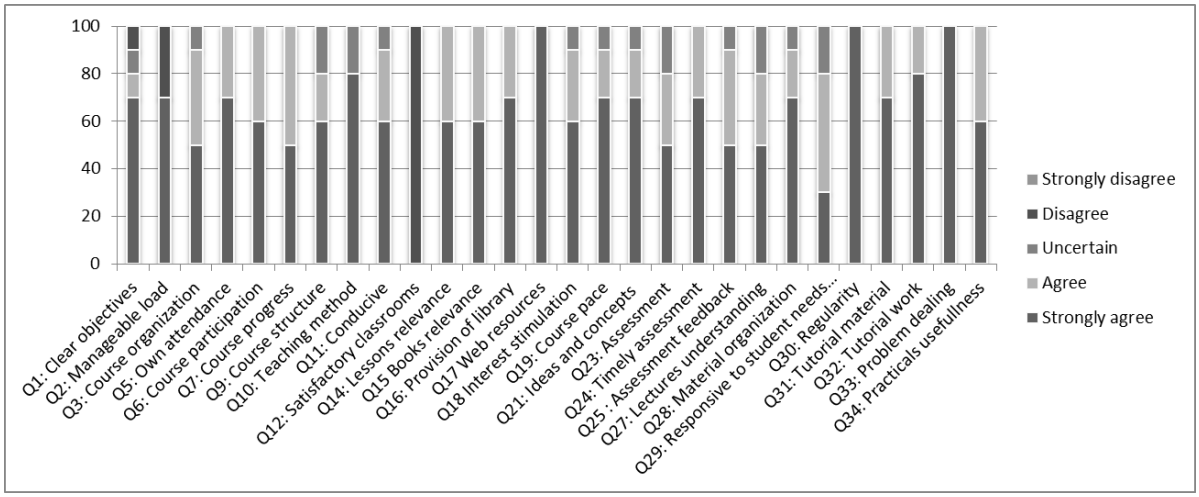
- Some time teacher was not available for lectures and other teachers took our classes,

Strengths:

- Teacher included contents in his lectures in very easy and simple way.
- Teacher encourages class participation.

Teacher 2 PP-506

As is evident from thee following graphs, overall performance of the teacher rated by the student is excellent.



General Comments of the Students about this Teacher

<u>Teachers Evaluation (Proforma 10)</u>

Weaknesses:

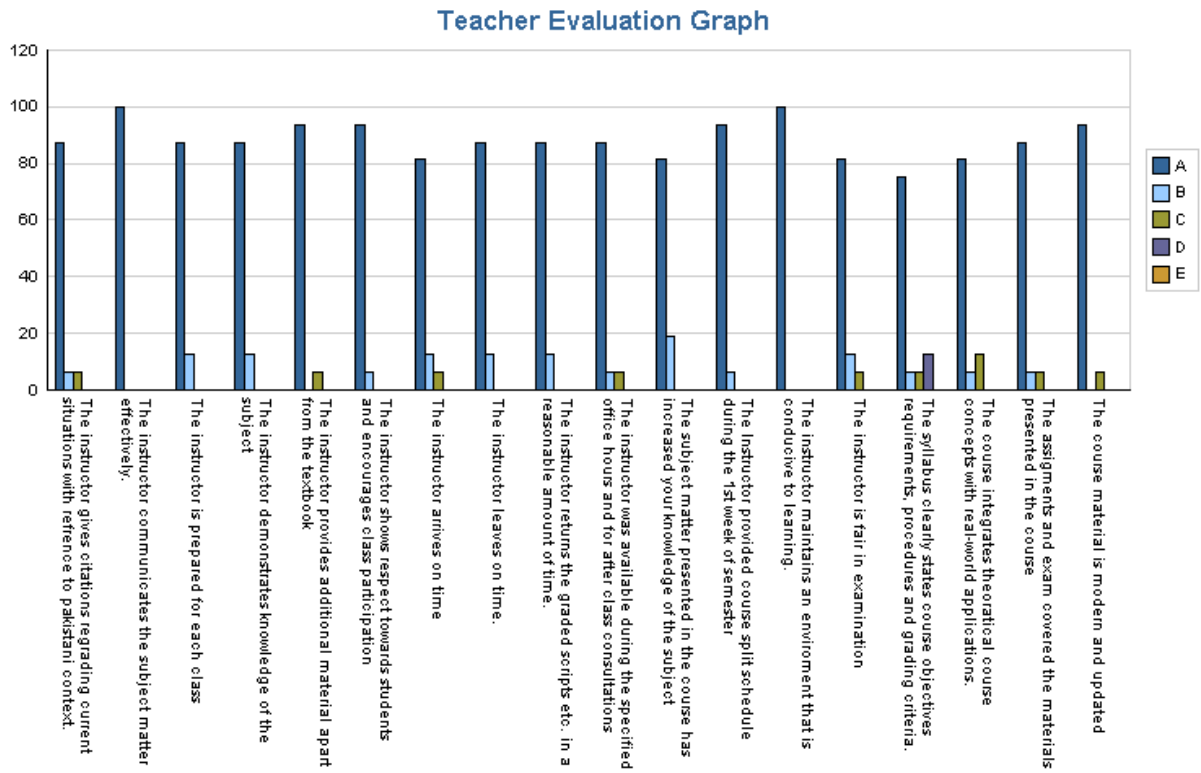
- Teacher should teach the course regularly throughout the semester.
- Teacher did not hold proper practicals.
- Teacher should arrange field visits and study tours to learn more practically.

Strengths:

- Teacher encouraged class participation.
- Teacher was guiding.
-

Teacher 3 (PP-402)

The following graphs have shown that performance of the teacher rated by the students is good. However about 80-100 % studentd were uncertain that the course was completed and knowledge demonstration by the teacher. The teacher is punctual, shows respect to the studentsand fair in examination.



Gneral Comments about the Teacher

<u>Teachers Evaluation (Proforma 10)</u>

Weaknesses:

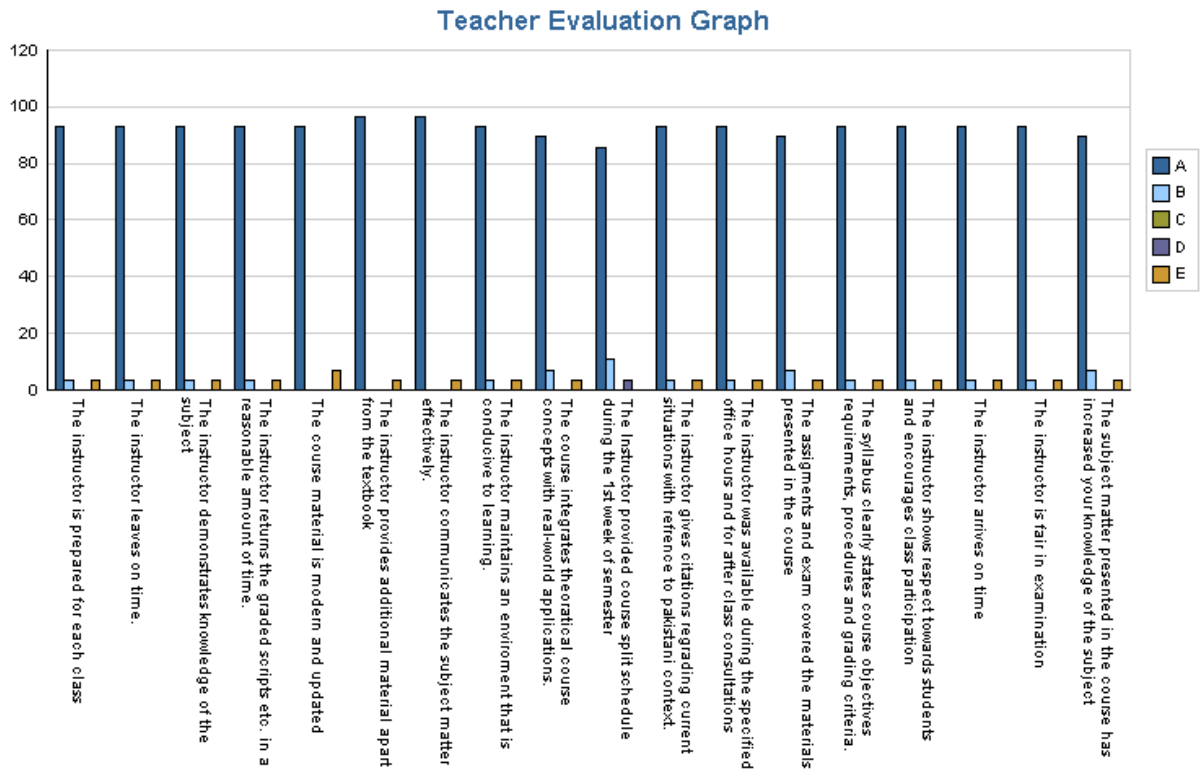
- Teacher should try to communicate his knowledge effectively.
- Teacher should encourage class participation.

Strengths:

- Teacher was punctual.

Teacher: 3 (PP- 401)

Analyses of the proforma revealed good performance of the teacher on overall basis. Generally all the indicators are categorized as strongly agreed and agreed.



General Cooments about the Teacher

Teachers Evaluation (Proforma 10)

Weaknesses:

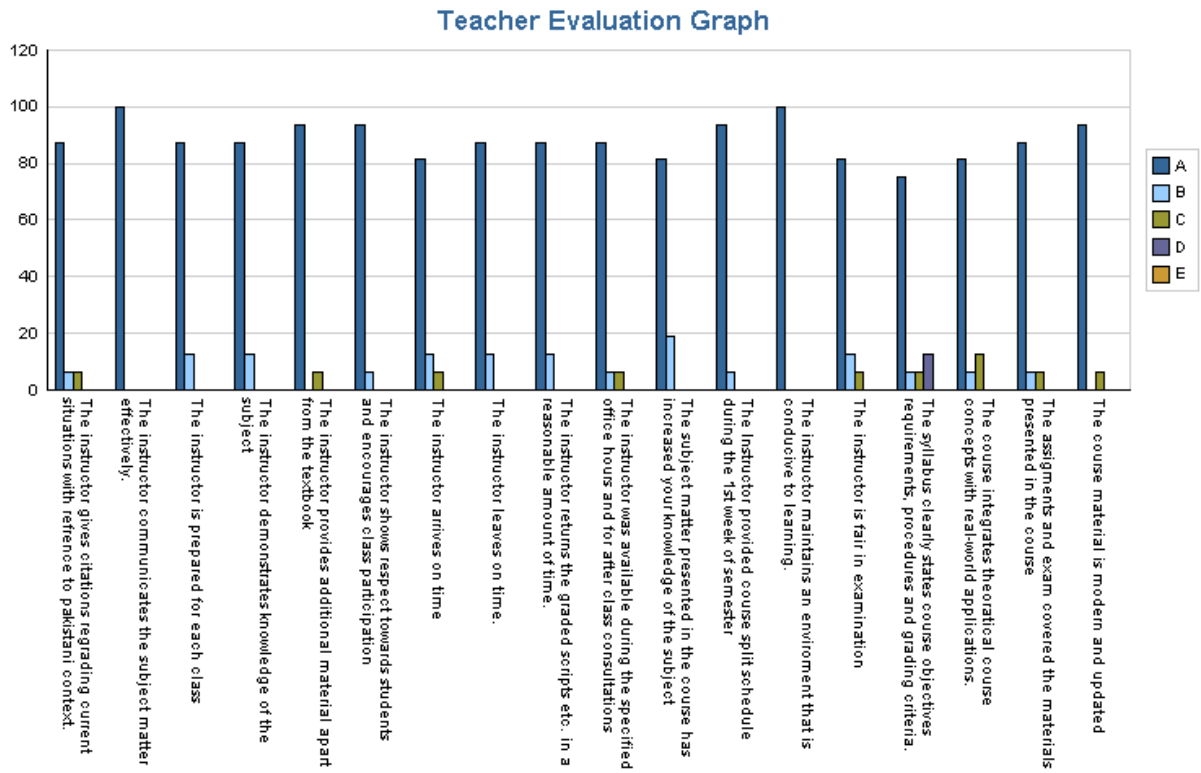
- Teacher should arrange field visits and study tours to learn more practically.

Strengths:

- Teacher encouraged class participation.
- Lectures were informative and full of knowledge.
- Teacher had good command on his subject.

Teacher: 4(PP -501)

According to the Assessment conducted against the course entitled as “Introductory Mycology” offered in fall-13, 80-100% students were strongly agreed on statement while few expressed their view as agreed/uncertain.



General Comment of Students about this Teacher

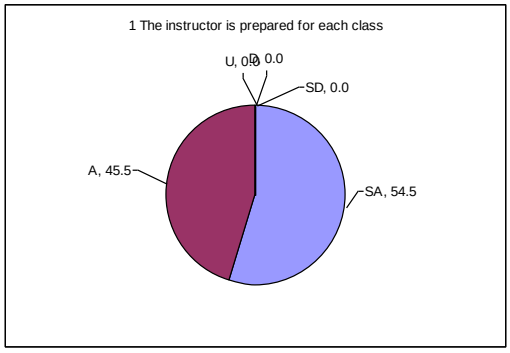
Teachers Evaluation (Proforma 10)

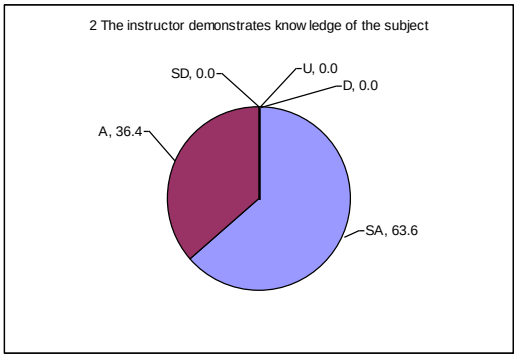
Strengths:

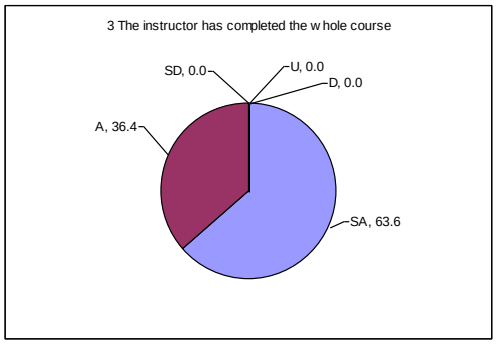
- Teacher was cooperative.
- Teacher was nice and humble.

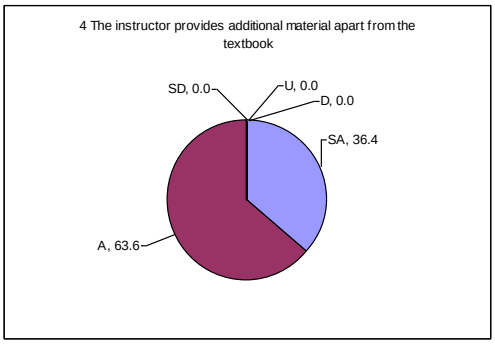
Teacher: 5 (PP- 605)

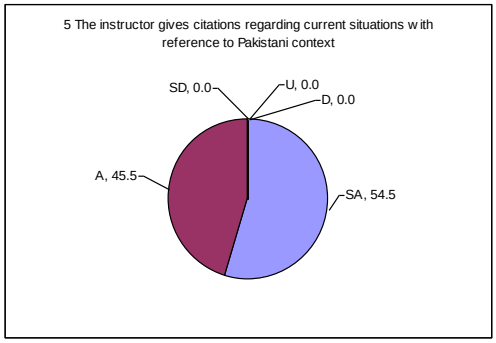
Survey results indicatedthat almost all agreed that the teacher was prepared for the class. Likewise they were also agreed that the teacher provides additional material apart from the text and the teacher used to give them citation regarding current situations with reference to Pakistani context. The responses of the remaining questions are also similar.

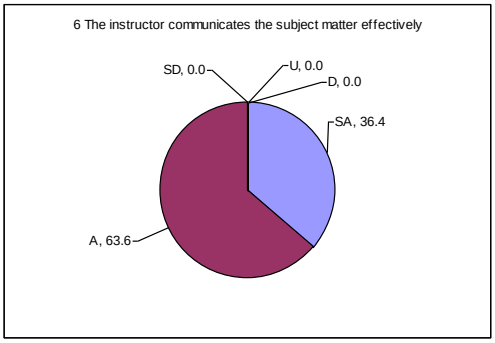

1 The instructor is prepared for each class
U, 0.0
D, 0.0
SD, 0.0
A, 45.5
SA, 54.5

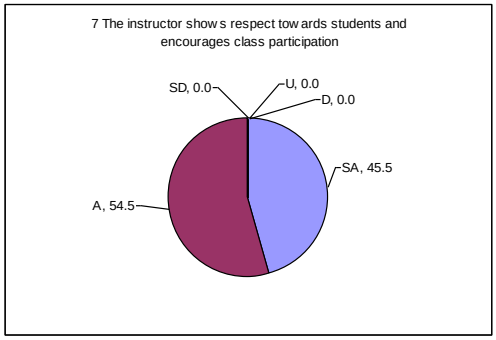

2 The instructor demonstrates know ledge of the subject
SD, 0.0
U, 0.0
D, 0.0
A, 36.4
SA, 63.6

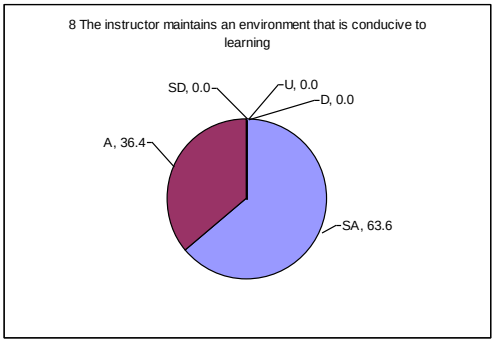

3 The instructor has completed the w hole course
SD, 0.0
U, 0.0
D, 0.0
A, 36.4
SA, 63.6

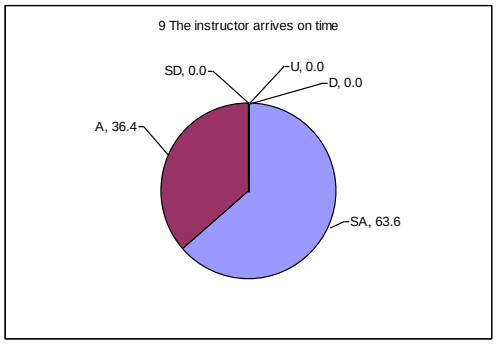

4 The instructor provides additional material apart from the textbook
SD, 0.0
U, 0.0
D, 0.0
SA, 36.4
A, 63.6

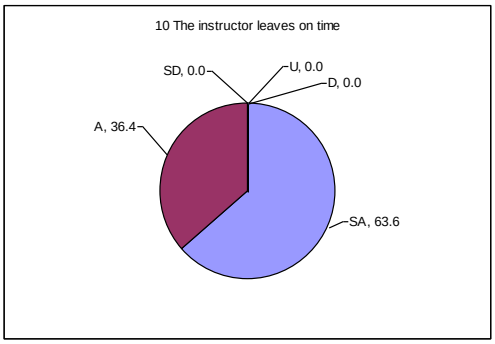

5 The instructor gives citations regarding current situations w ith reference to Pakistani context
SD, 0.0
U, 0.0
D, 0.0
A, 45.5
SA, 54.5

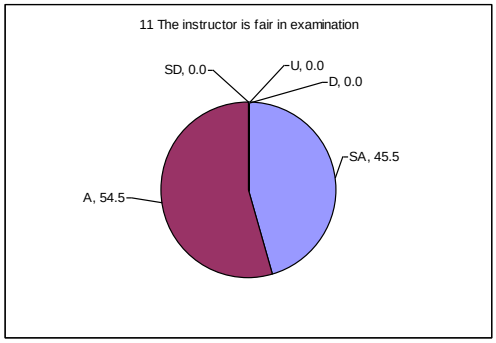

6 The instructor communicates the subject matter effectively
SD, 0.0
U, 0.0
D, 0.0
SA, 36.4
A, 63.6

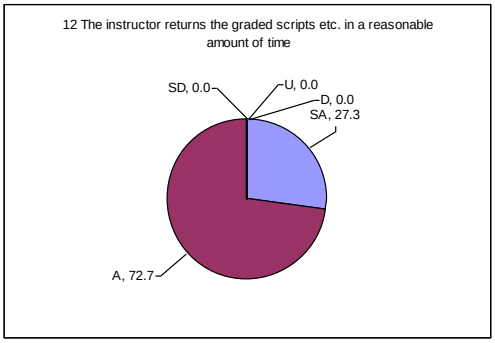

7 The instructor shows respect towards students and encourages class participation
SD, 0.0
U, 0.0
D, 0.0
SA, 45.5
A, 54.5

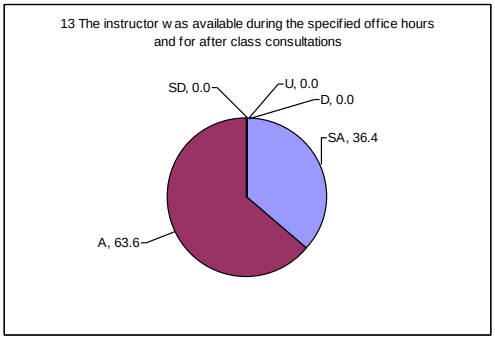

8 The instructor maintains an environment that is conducive to learning
SD, 0.0
U, 0.0
D, 0.0
A, 36.4
SA, 63.6

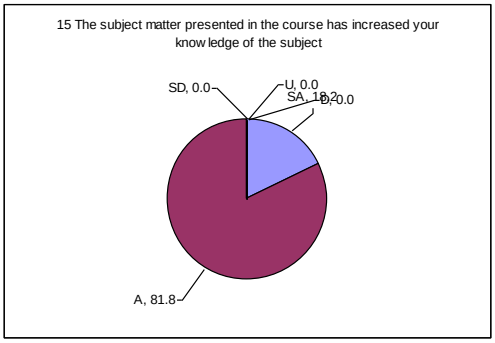

9 The instructor arrives on time
SD, 0.0
U, 0.0
D, 0.0
A, 36.4
SA, 63.6

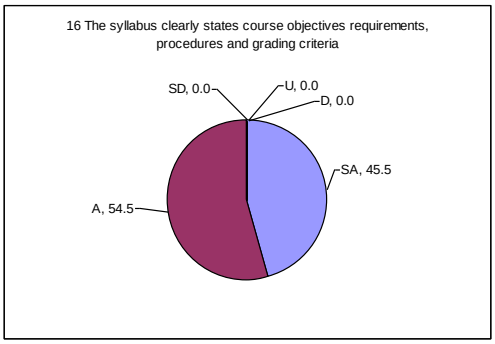

10 The instructor leaves on time
SD, 0.0
U, 0.0
D, 0.0
A, 36.4
SA, 63.6

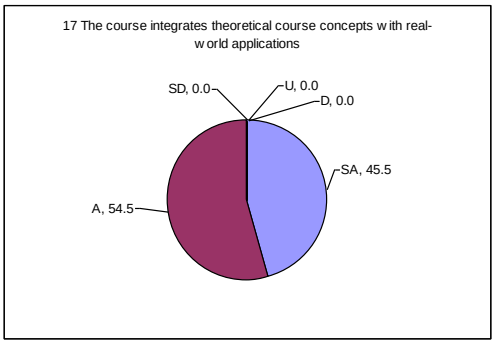

11 The instructor is fair in examination
SD, 0.0
U, 0.0
D, 0.0
SA, 45.5
A, 54.5

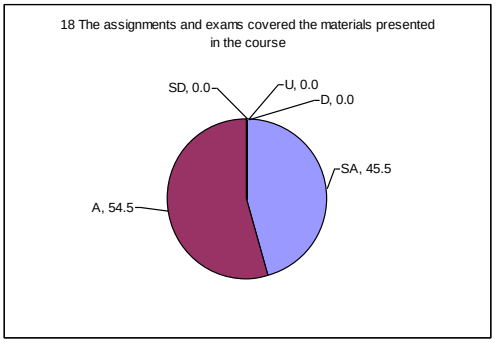

12 The instructor returns the graded scripts etc. in a reasonable amount of time
SD, 0.0
U, 0.0
D, 0.0
SA, 27.3
A, 72.7

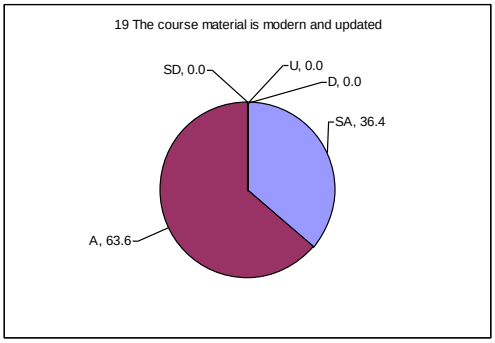












General Comments of Students about this Teacher

Teachers Evaluation (Proforma 10)

Weaknesses:

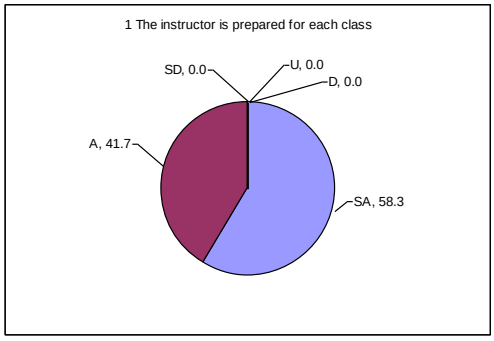
- Teacher should provide notes on time.

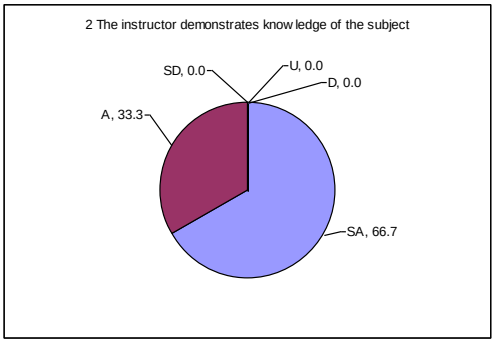
Strengths:

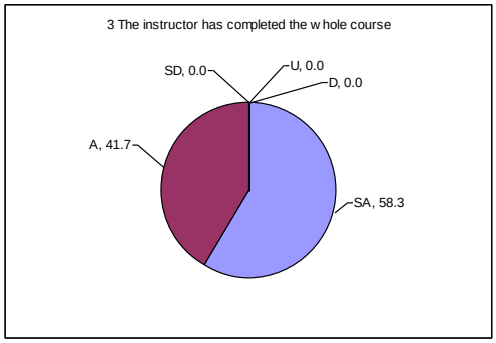
- Teacher has good command on the subject.

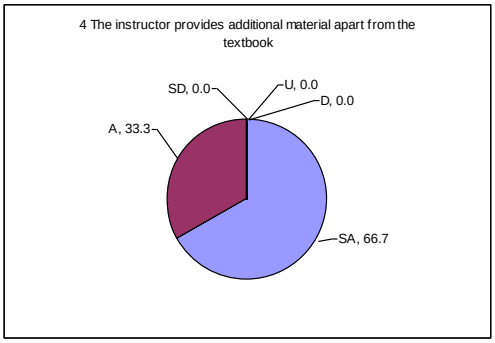
Teacher: 6 (PP-600)

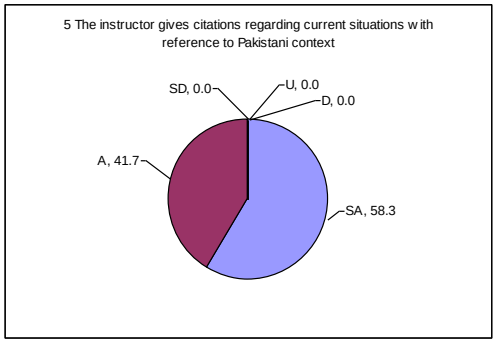
It is obvious from the pie charts that the teacher performance was excellent. Generally all the parameters are categorized as strongly agreed and agreed by all the students. Almost all students were agreed that the teacher demonstrates knowledge of the subject, the teacher completed the whole course, the teacher used to communicate the subject matter effectively.

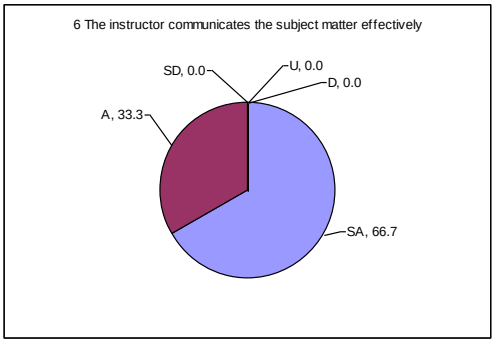


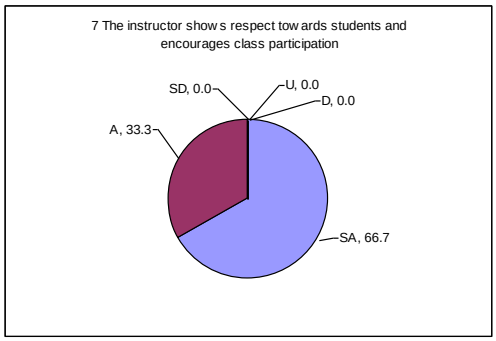


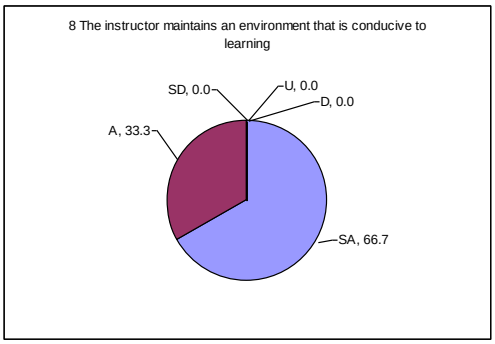


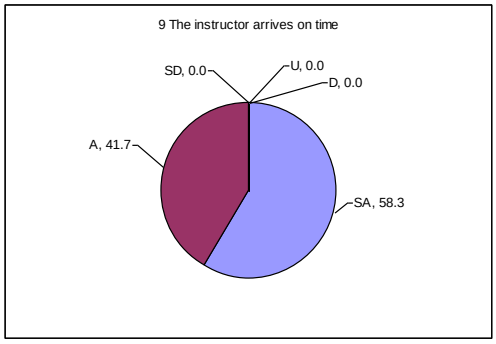


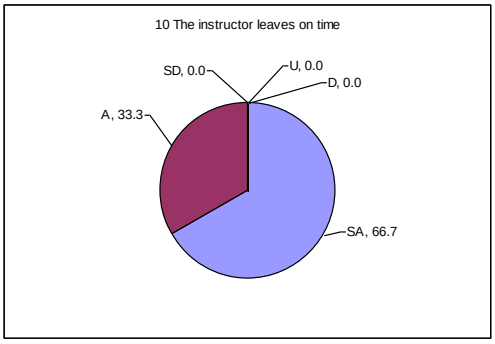


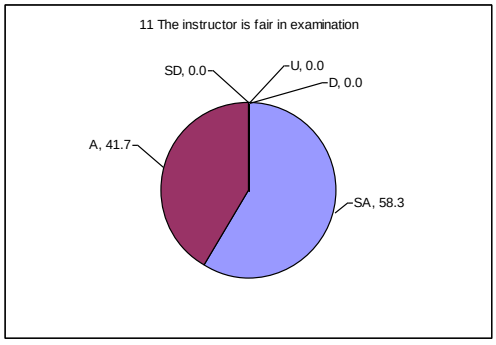


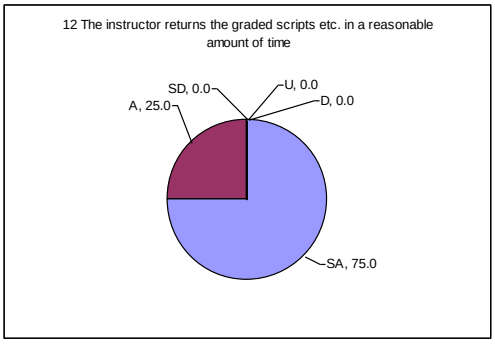

7 The instructor shows respect towards students and encourages class participation
SD, 0.0
U, 0.0
D, 0.0
A, 33.3
SA, 66.7

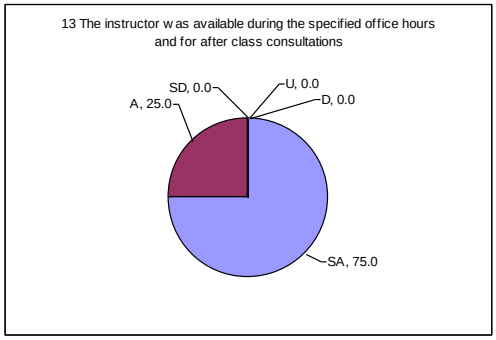

8 The instructor maintains an environment that is conducive to learning
SD, 0.0
U, 0.0
D, 0.0
A, 33.3
SA, 66.7

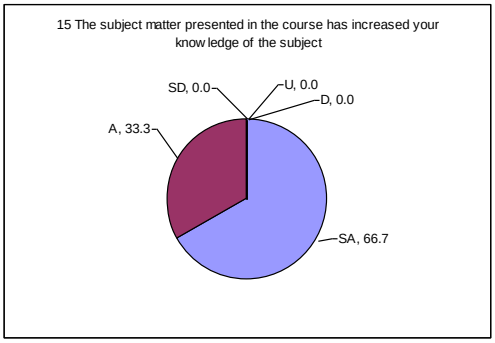

9 The instructor arrives on time
SD, 0.0
U, 0.0
D, 0.0
A, 41.7
SA, 58.3

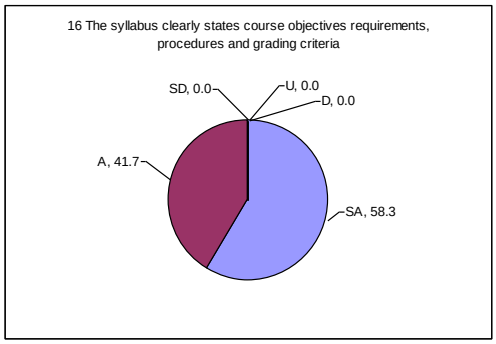

10 The instructor leaves on time
SD, 0.0
U, 0.0
D, 0.0
A, 33.3
SA, 66.7

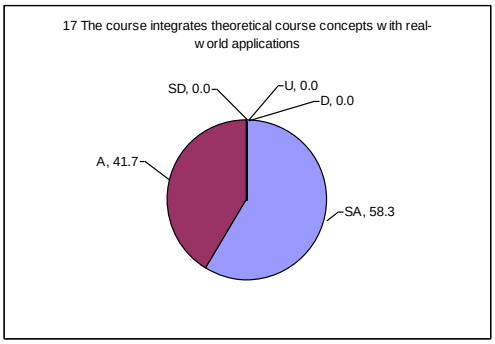

11 The instructor is fair in examination
SD, 0.0
U, 0.0
D, 0.0
A, 41.7
SA, 58.3

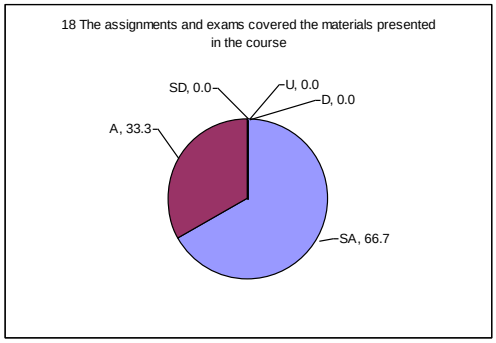

12 The instructor returns the graded scripts etc. in a reasonable amount of time
SD, 0.0
U, 0.0
D, 0.0
A, 25.0
SA, 75.0

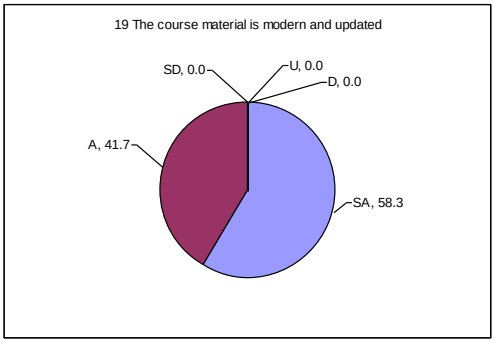












General Comments of the Students about this Teacher

<u>Teachers Evaluation (Proforma 10)</u>

Weaknesses:

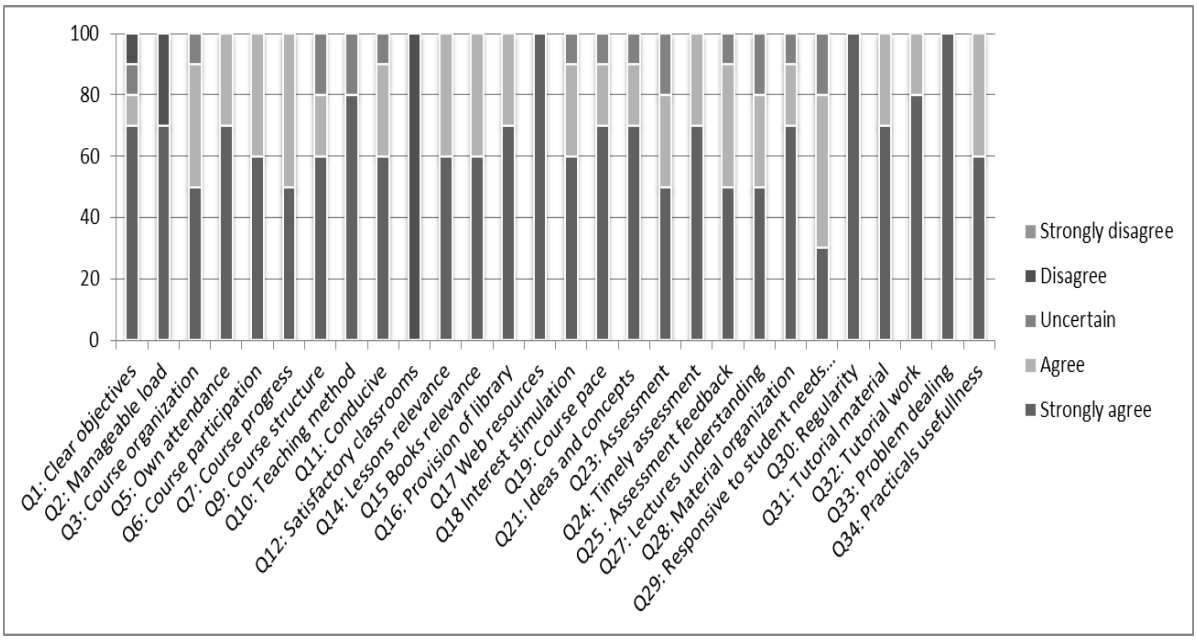
- Teacher should provide notes on time.

Strengths:

- Teacher has good command on the subject.

Teacher: 6 (PP- 606)

Performance of the teacher was graded as very good by students.All thestudents agreed that syllabus clearly states course objectives.



General Comments of the Students about this Teacher

<u>Teachers Evaluation (Proforma 10)</u>

Weaknesses:

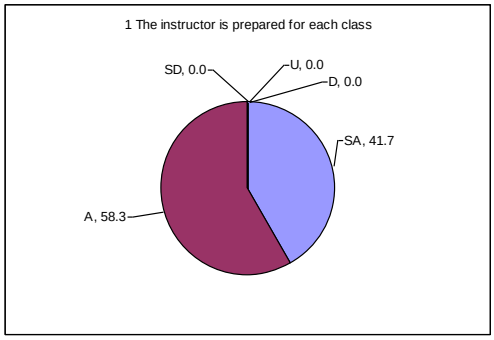
- Teacher should provide notes on time.

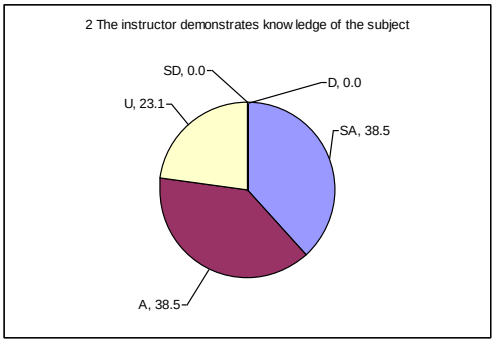
Strengths:

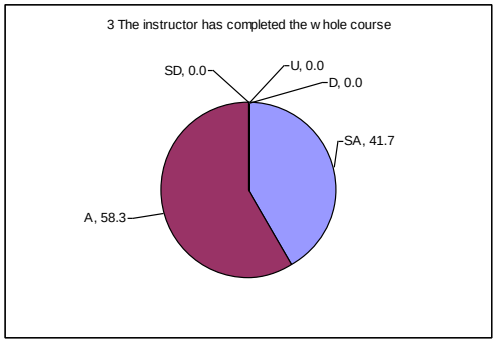
- Teacher completed the course within time.
- Teacher was nice.

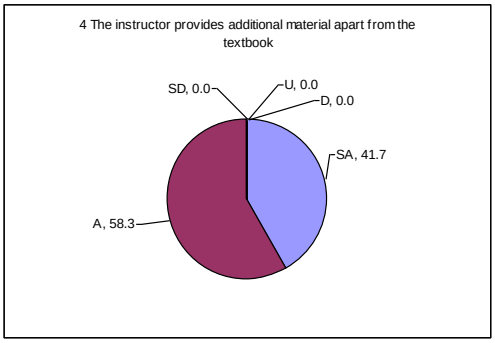
Teache: 7 (PP- 604)

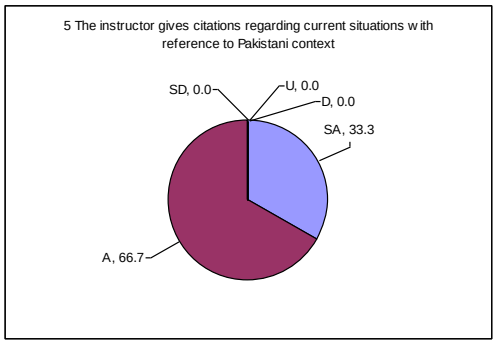
According to the Assessment conducted against the course entitled as “Pesticides, their action and application” offered in spring -14, 90% students were strongly satisfied on statement while 30% trend as satisfied about the rest of the queries asked. Few expressed their views as uncertain.

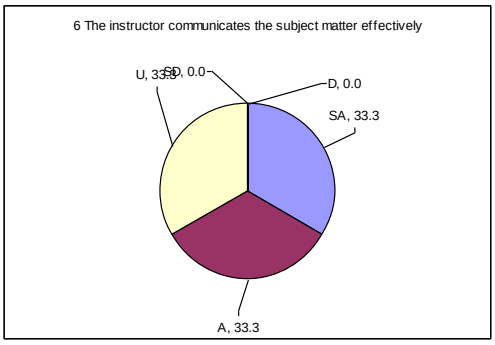

1 The instructor is prepared for each class
SD, 0.0
U, 0.0
D, 0.0
SA, 41.7
A, 58.3

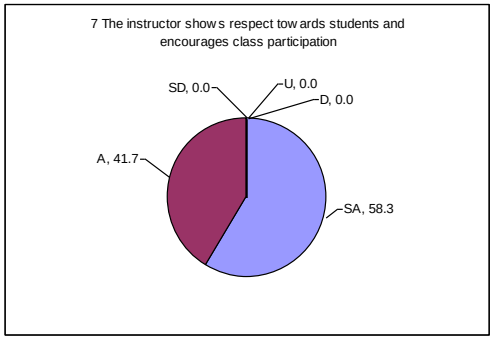

2 The instructor demonstrates knowledge of the subject
SD, 0.0
D, 0.0
U, 23.1
SA, 38.5
A, 38.5

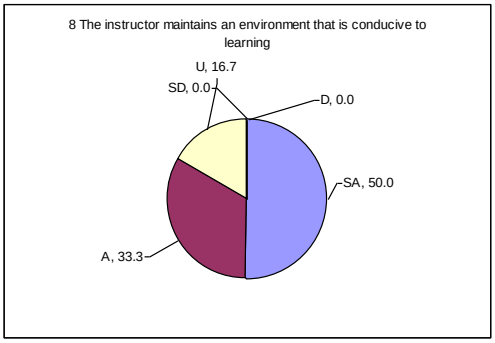

3 The instructor has completed the whole course
SD, 0.0
U, 0.0
D, 0.0
SA, 41.7
A, 58.3

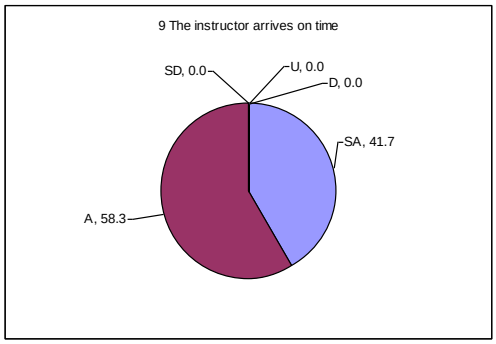

4 The instructor provides additional material apart from the textbook
SD, 0.0
U, 0.0
D, 0.0
SA, 41.7
A, 58.3

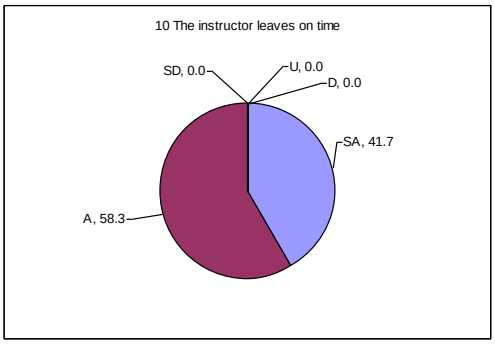

5 The instructor gives citations regarding current situations with reference to Pakistani context
SD, 0.0
U, 0.0
D, 0.0
SA, 33.3
A, 66.7

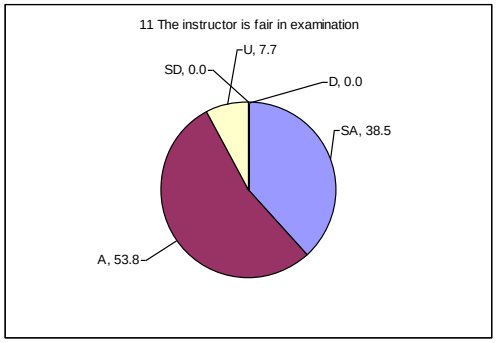

6 The instructor communicates the subject matter effectively
SD, 0.0
D, 0.0
SA, 33.3
A, 33.3

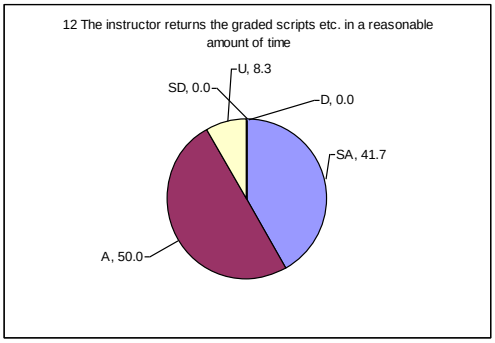

7 The instructor shows respect towards students and encourages class participation
SD, 0.0
U, 0.0
D, 0.0
A, 41.7
SA, 58.3

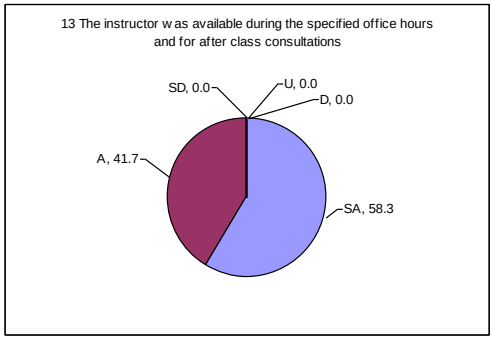

8 The instructor maintains an environment that is conducive to learning
U, 16.7
SD, 0.0
D, 0.0
SA, 50.0
A, 33.3

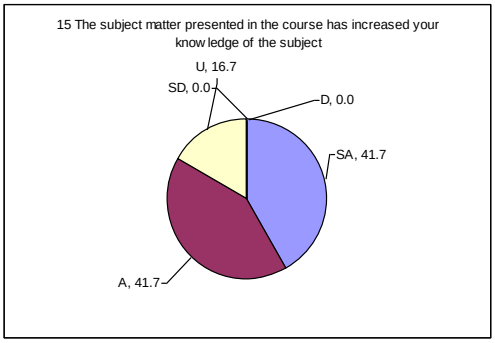

9 The instructor arrives on time
SD, 0.0
U, 0.0
D, 0.0
SA, 41.7
A, 58.3

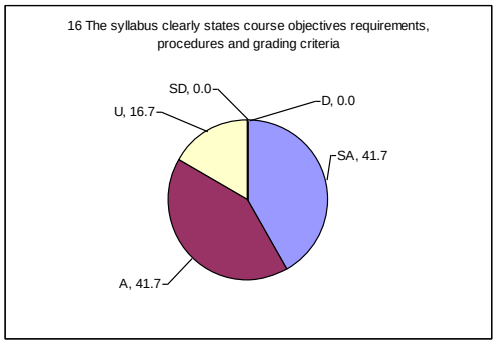

10 The instructor leaves on time
SD, 0.0
U, 0.0
D, 0.0
SA, 41.7
A, 58.3

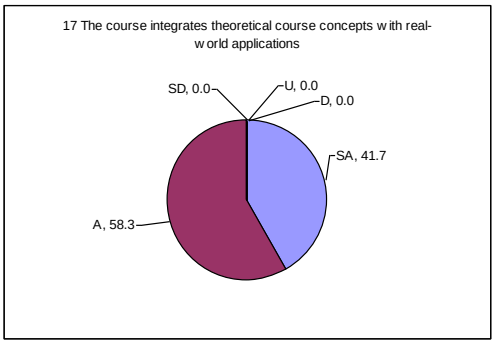

11 The instructor is fair in examination
U, 7.7
SD, 0.0
D, 0.0
SA, 38.5
A, 53.8

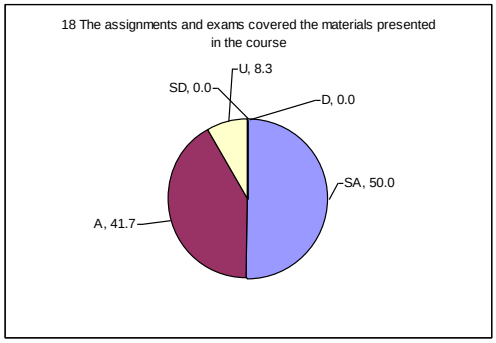

12 The instructor returns the graded scripts etc. in a reasonable amount of time
U, 8.3
SD, 0.0
D, 0.0
SA, 41.7
A, 50.0

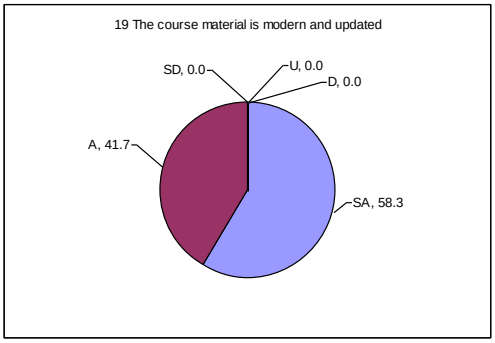












General Comments of the Students about this Teacher

Teachers Evaluation (Proforma 10)

Weaknesses:

- Teacher should encourage class participation.

Strengths:

- Teacher completed the course within time.
- Teacher was punctual.

Faculty Course Review

The courses of the respective teachers were also evaluated as per Proforma1 twice during each academic year 2012-13 and 2013-14s at the end of each semester: Fall. semesters(October, 2012- February, 2013) and (October, 2013- February, 2014), Spring semesters (March, 2013- August, 2013) and (March, 2014- August, 2014), The results are shown in Fig-3 and 4. Sixteen courses were taugh altogether during the two semesters. In Fall semester PP-401, PP-501,PP-503, PP-505, PP-507,PP-509, PP-601, PP-603, PP-605 and PP-609 and in spring semester PP-402, PP-502,PP-504, PP-506, and PP-508 were taught by seven teachers Dr. Farah Naz, Dr.Abid riaz, Dr. Dr usman Raja, Mrs. Gulshan Irshad and Dr. M. Inam-ul-Haqin, Dr .M ashfaq and Dr.Tariq Mukhtar numbered 1-7. It is clear from the figure 2.a that during fall semester the course taught by the teacher 5 is on the top securing 4.75 points and the course of Teacher 3 is on second number, securing 4.63 points. The course taught by teacher 4 was ranked at the bottom securing 3.87 points. Similarly, in the spring semesterthe course taught by the teacher 5 is again on the top securing 4.42 points and the course taught by teacher 7 was ranked at the bottom securing 4.42 points (Fig. 4). The overall performance of all the cources was howevercan be ranked as of high-quality. The scores of other courses of respective teachers can be seen from the graph.

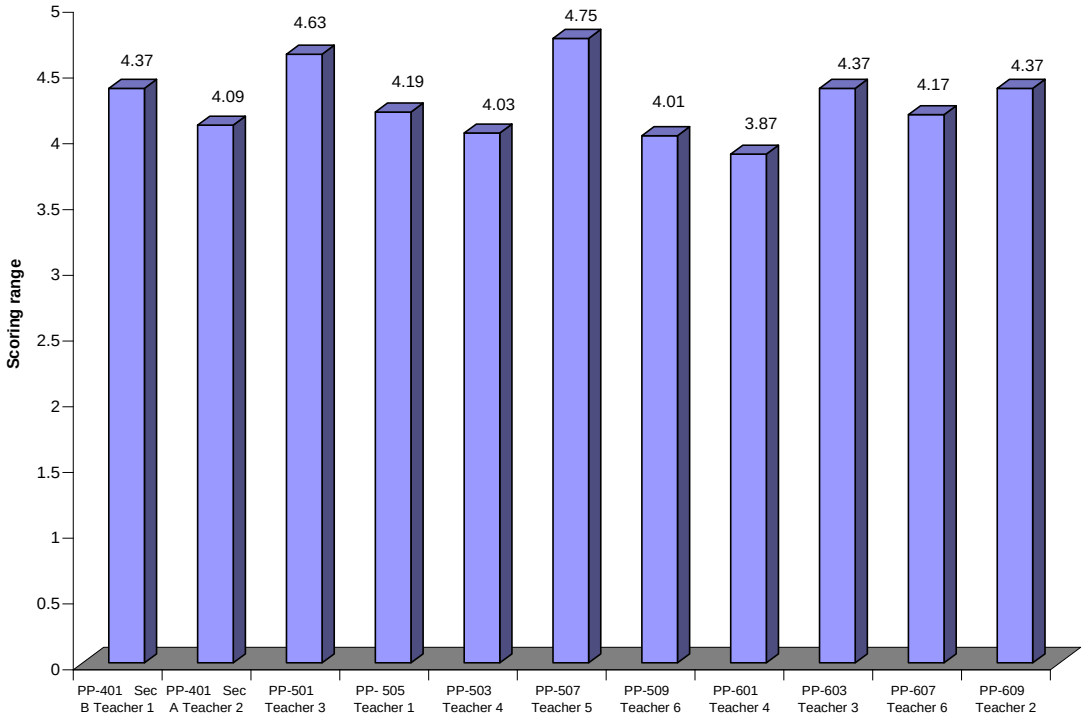


Figure: 3 The performance level for each Plant Pathology courses offered in Fall Semesters during 2012-13 & 2013-14

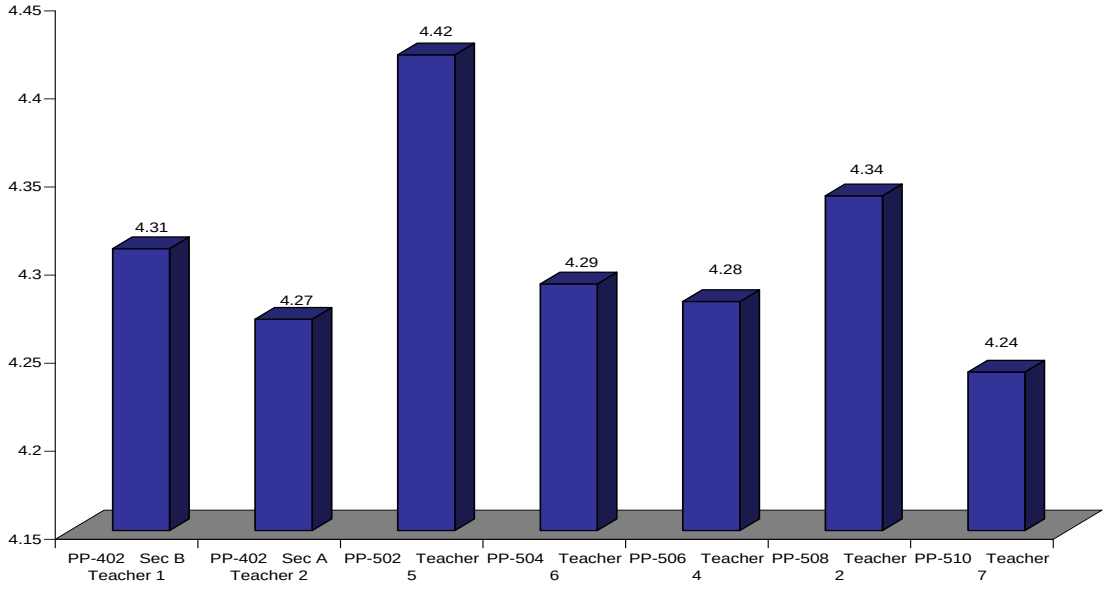
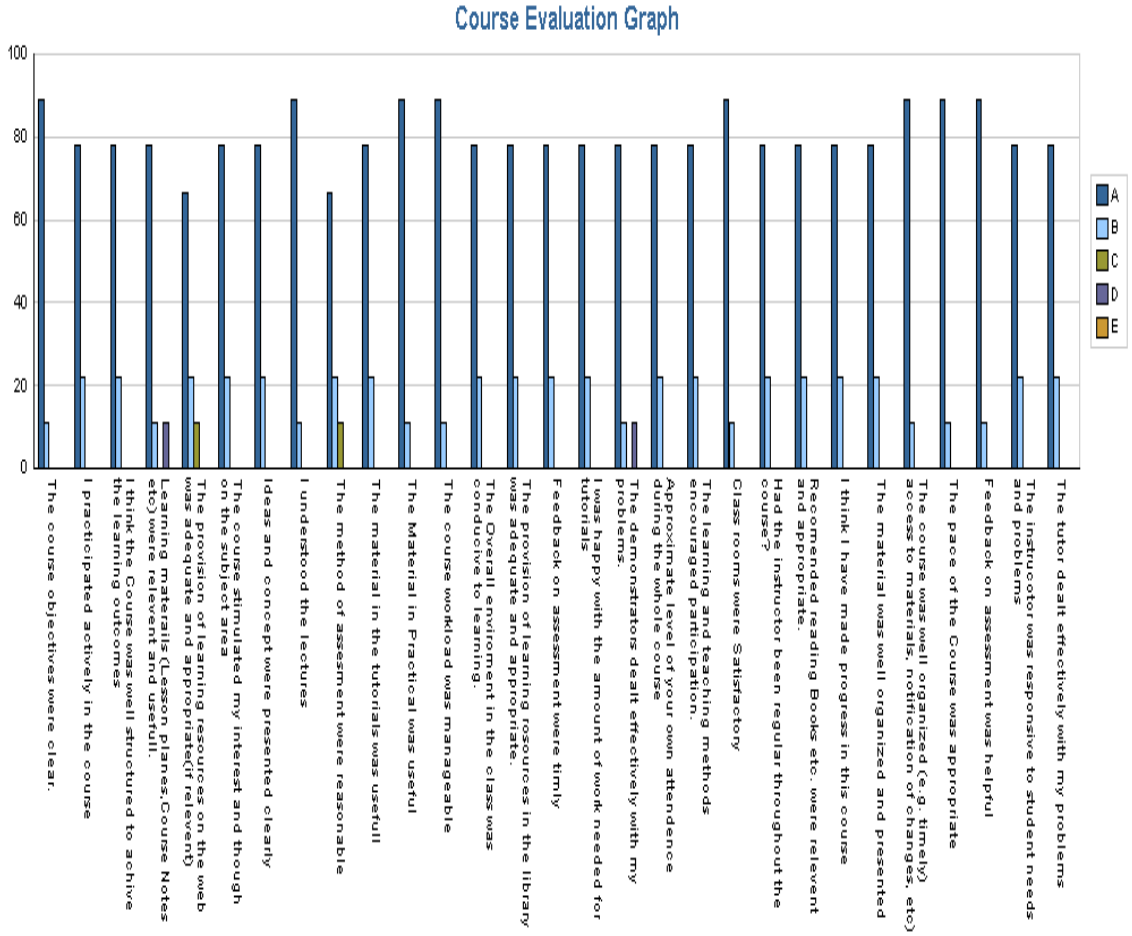


Figure: 4 the performance level for each Plant Pathology courses offered in Spring Semesters 2013&2014

PP-603: 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 90 % reported that they have made progress in this course.About 20-30 % disagreed regarding the provision of learning in the library was adequate.



Weaknesses:

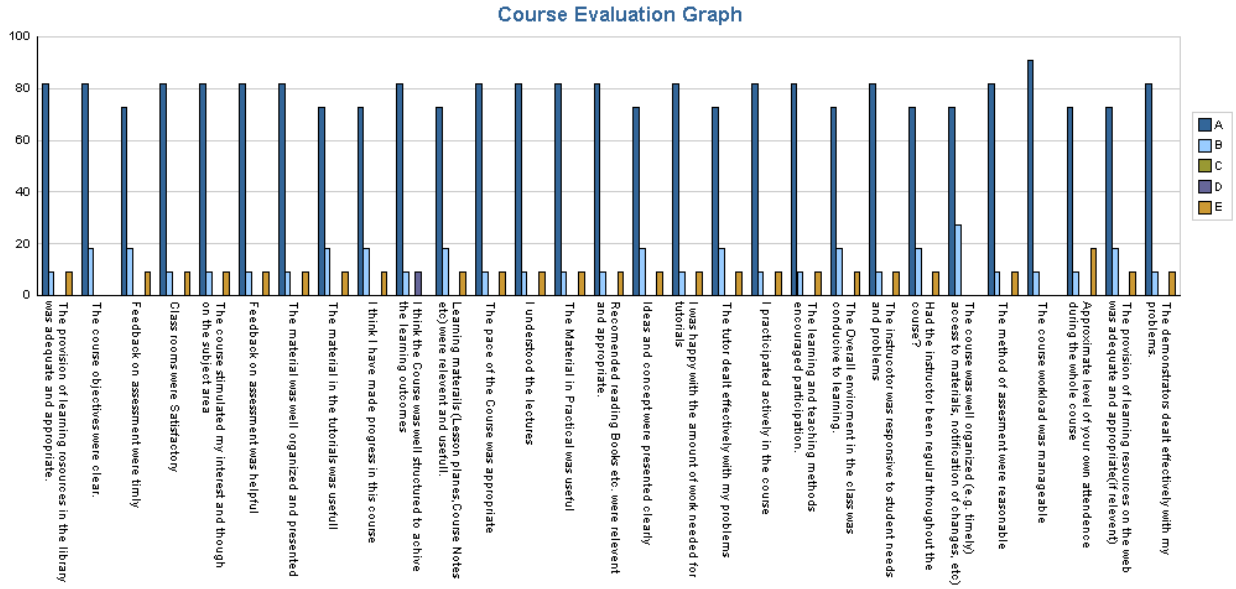
- Teacher should take the lecture by himself.
- Course can be improved by performing the practical.

Strengths:

- Course was informative.

PP-608 Teacher 1

Most of the students were agreed with the statement that course work was manageable, objectives were clear, 80-100% students were strongly agreed on statement while 15-25% expressed their view as agreed.15% students were expressed their view as uncertain.



Weaknesses:

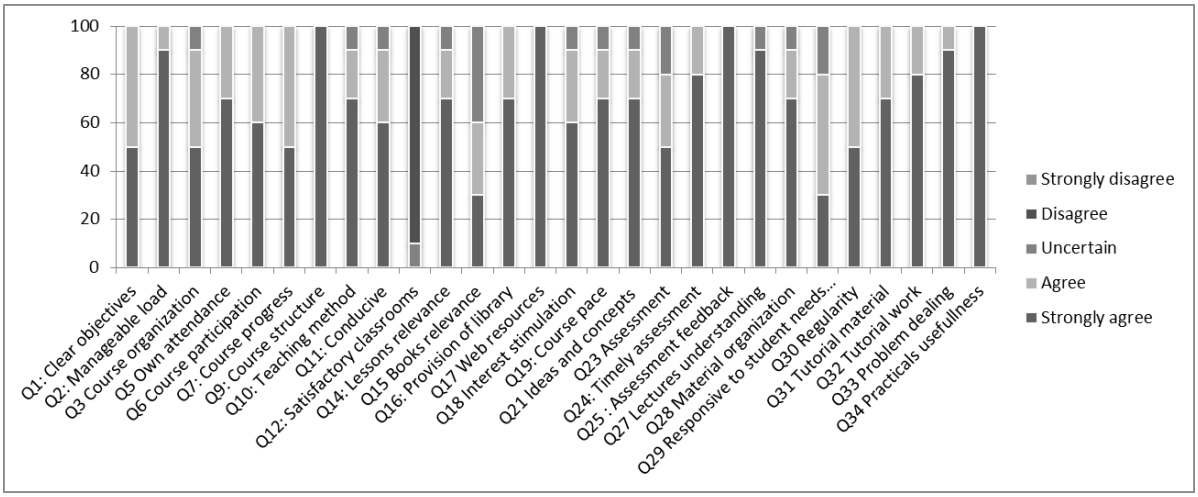
- Teacher should take the lecture by himself.
- Course can be improved by performing the practical.

Strengths:

- Course was informative.

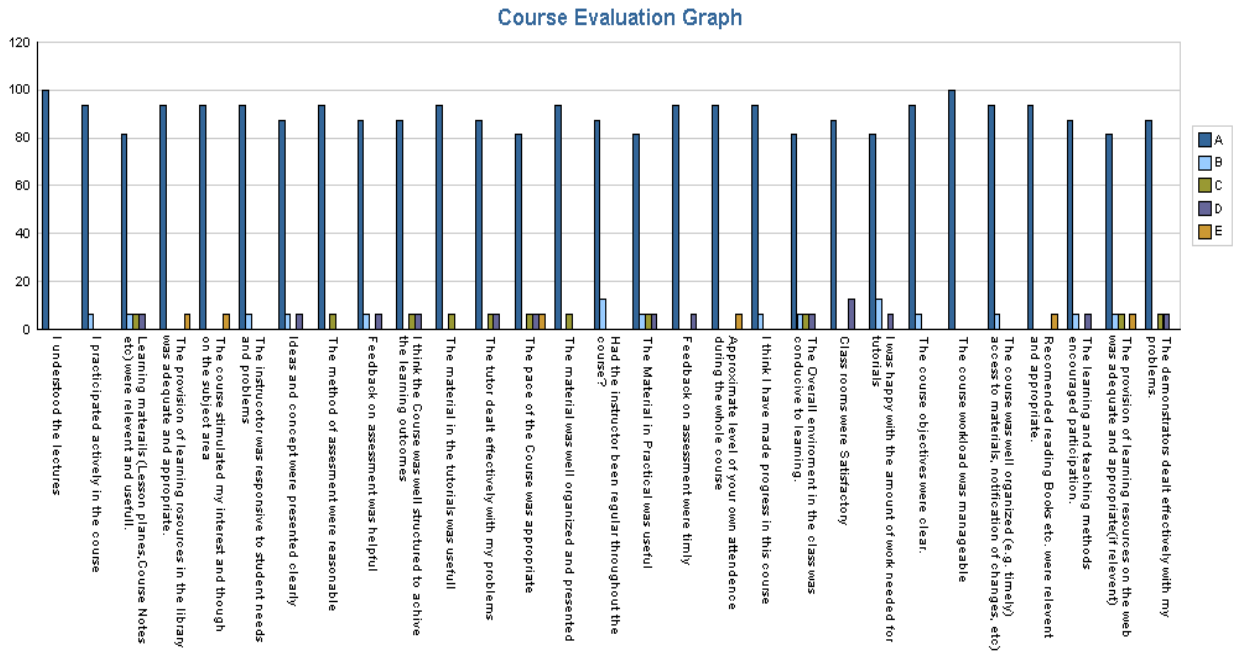
PP- 506 Teacher 2

About 60-70 percent of the respondents agreedwith the statements such as the course objectives were clear, course load was manageable,course was well organized, understanding of lectures and pace of course was appropriate. Some students expressed their view as uncertain regarding the clarity of the course objectives. About 60% were uncertain about the learning and teaching method encouraged participation.



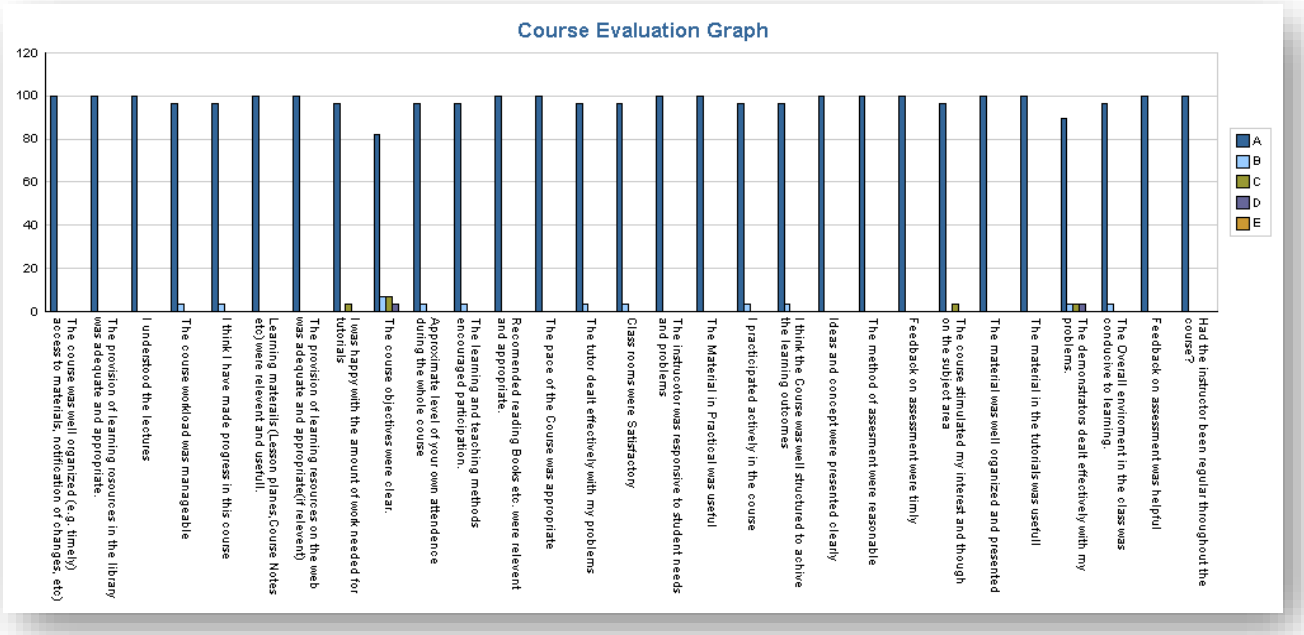
PP- 402 Teachers 3

About 80-100 percent of the respondents agreedwith the statements such as the course objectives were clear, course load was manageable,course was well organized, understanding of lectures and pace of course was appropriate. Some students expressed their view as uncertain regarding the clarity of the course objectives.



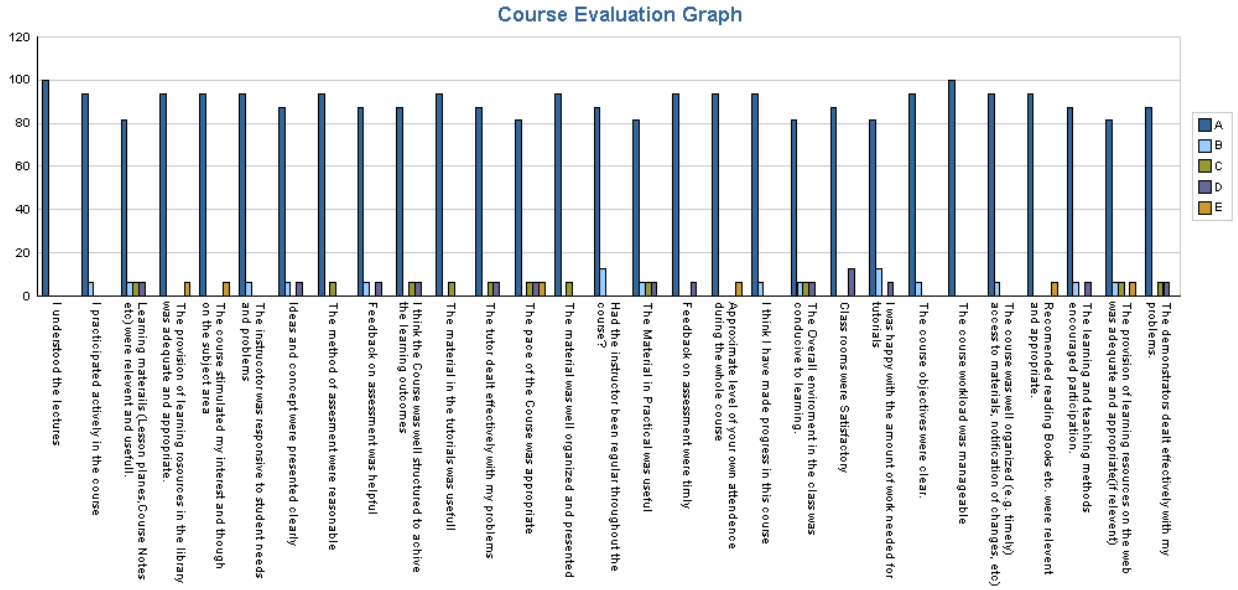
PP-401 (Teacher: 3)

About 80-100 percent of the respondents agreedwith the statements such as the course objectives were clear, course load was manageable,course was well organized, understanding of lectures and pace of course was appropriate. Some students expressed their view as uncertain regarding the clarity of the course objectives.



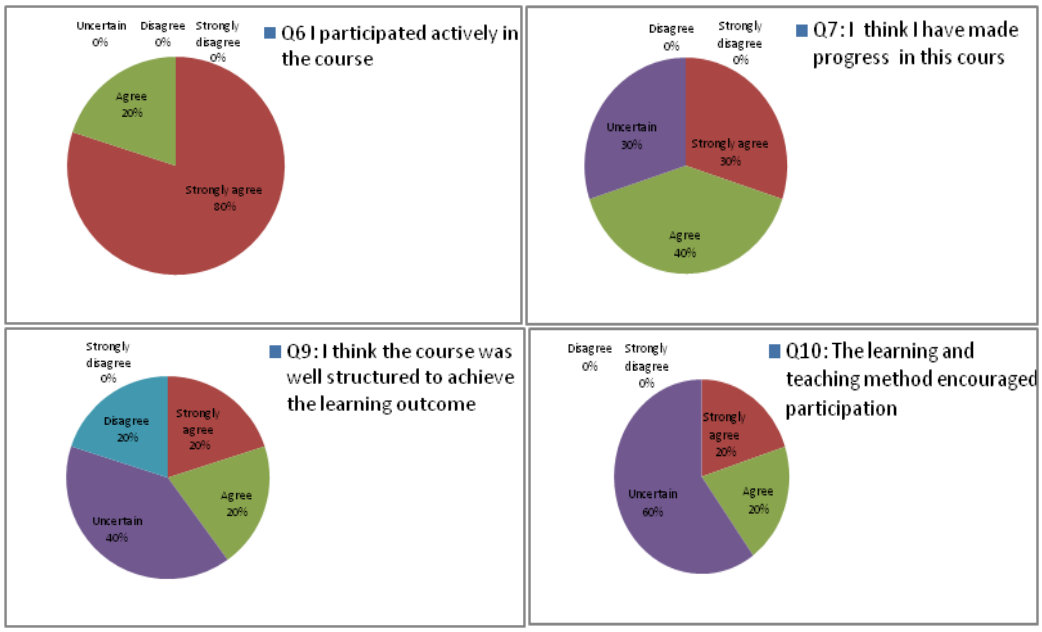
PP-501 (Teacher: 4)

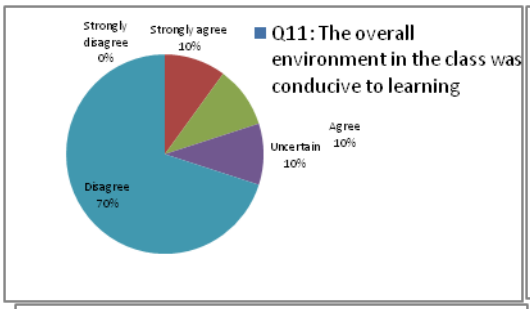
According to the Assessment conducted against the course entitled as “Introductory Mycology” offered in fall-13, 80-100% students were strongly agreed on statement while few expressed their view as agreed/uncertain.

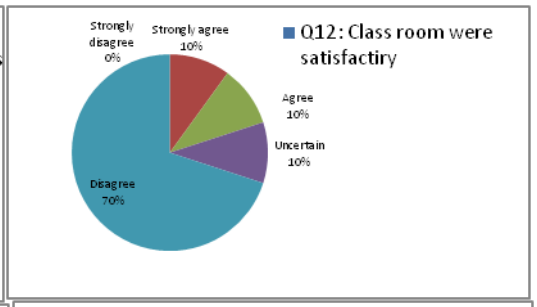


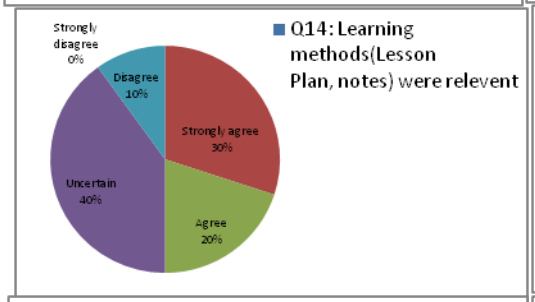
PP-605 (Teacher 5)

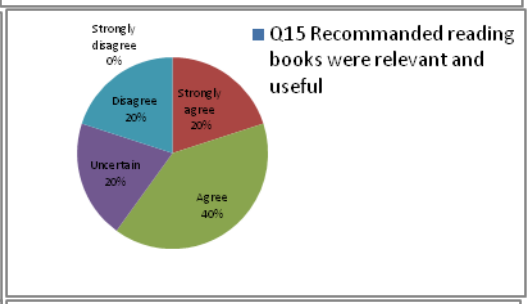
About 80-100 percent of the respondents agreedwith the statements such as the course objectives were clear, course load was manageable, course was well organized, understanding of lectures and pace of course was appropriate. Some students expressed their view as uncertain regarding the clarity of the course objectives.

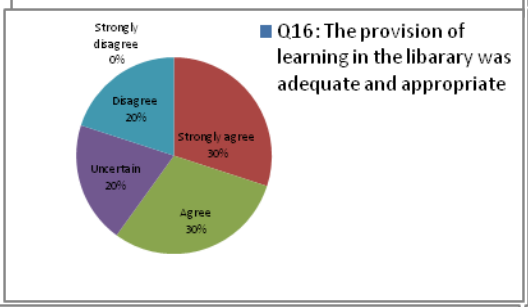


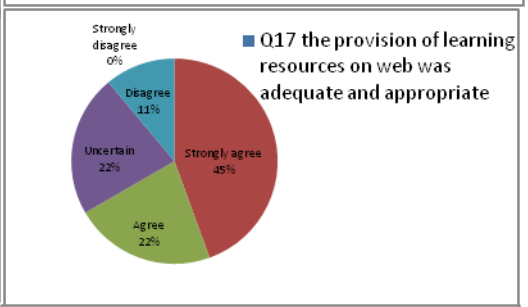

Strongly disagree 0%
Strongly agree 10%
Agree 10%
Uncertain 10%
Disagree 70%
Q11: The overall environment in the class was conducive to learning

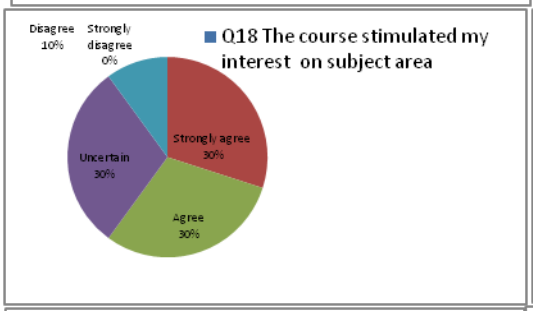

Strongly disagree 0%
Strongly agree 10%
Agree 10%
Uncertain 10%
Disagree 70%
Q12: Class room were satisfactiry

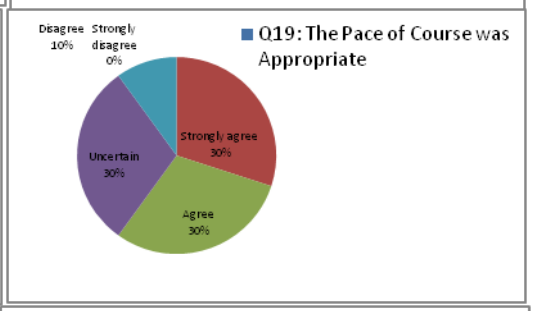

Strongly disagree 0%
Disagree 10%
Strongly agree 30%
Uncertain 40%
Agree 20%
Q14: Learning methods(Lesson Plan, notes) were relevent

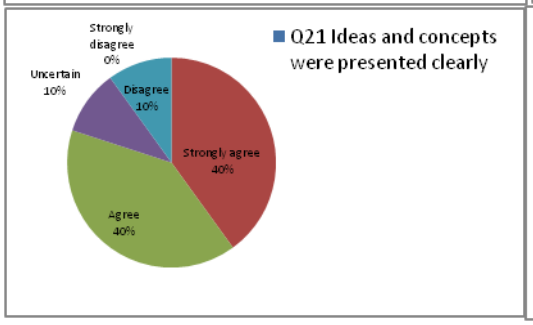

Strongly disagree 0%
Disagree 20%
Strongly agree 20%
Uncertain 20%
Agree 40%
Q15 Recommanded reading books were relevant and useful

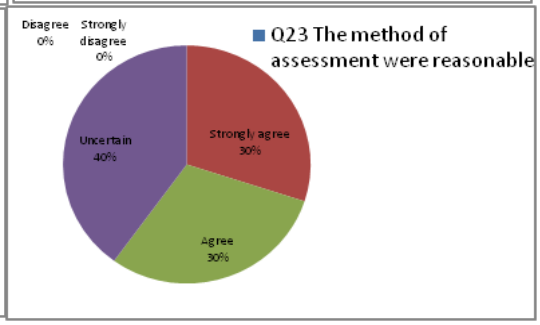

Strongly disagree 0%
Disagree 20%
Strongly agree 30%
Uncertain 20%
Agree 30%
Q16: The provision of learning in the libarary was adequate and appropriate

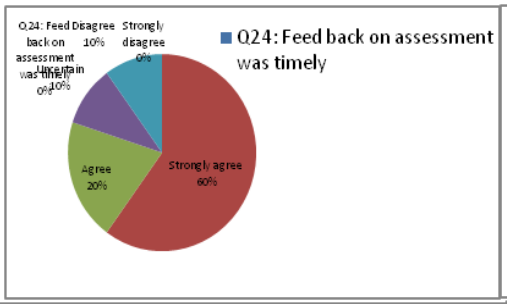

Strongly disagree 0%
Disagree 11%
Uncertain 22%
Strongly agree 45%
Agree 22%
Q17 the provision of learning resources on web was adequate and appropriate

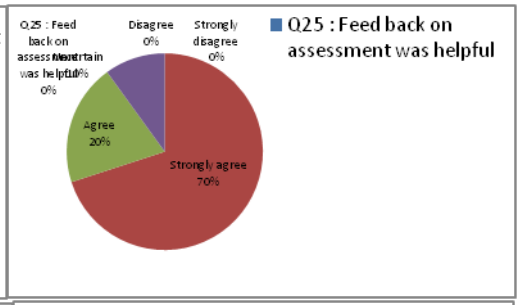

Disagree 10%
Strongly disagree 0%
Uncertain 30%
Strongly agree 30%
Agree 30%
Q18 The course stimulated my interest on subject area

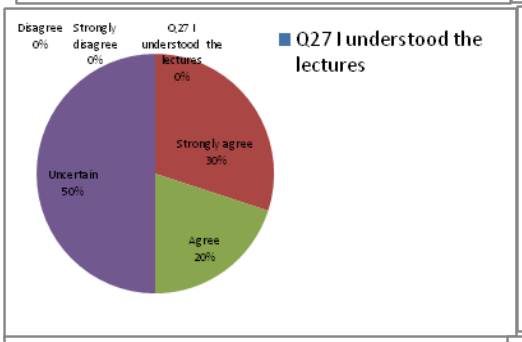

Disagree 10%
Strongly disagree 0%
Uncertain 30%
Strongly agree 30%
Agree 30%
Q19: The Pace of Course was Appropriate

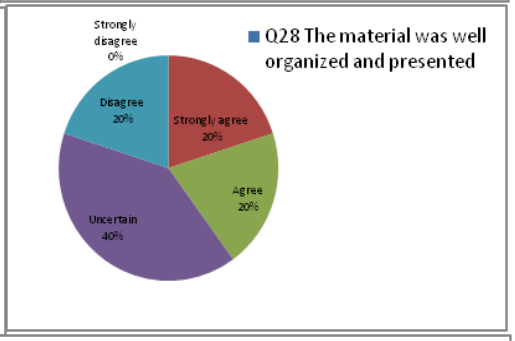

Strongly disagree 0%
Uncertain 10%
Disagree 10%
Strongly agree 40%
Agree 40%
Q21 Ideas and concepts were presented clearly

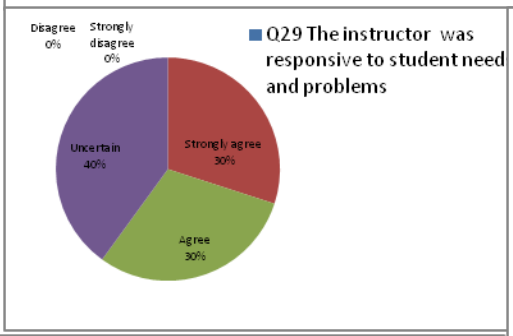

Disagree 0%
Strongly disagree 0%
Uncertain 40%
Strongly agree 30%
Agree 30%
Q23 The method of assessment were reasonable

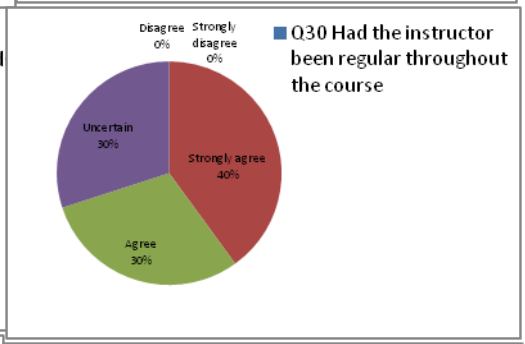

Q24: Feed back on assessment was timely
Disagree 10%
Strongly disagree 0%
Uncertain 10%
Agree 20%
Strongly agree 60%

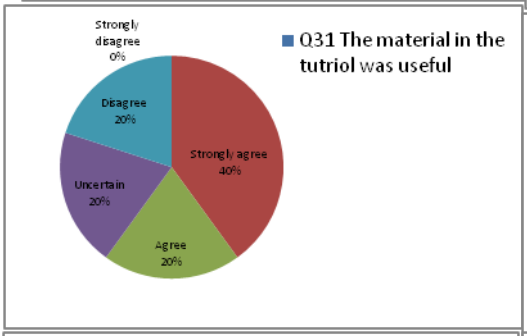

Q25 : Feed back on assessment was helpful
Disagree 0%
Strongly disagree 0%
Uncertain 10%
Agree 20%
Strongly agree 70%

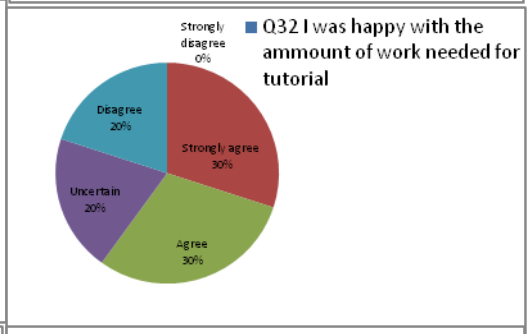

Q27 I understood the lectures
Disagree 0%
Strongly disagree 0%
Strongly agree 30%
Uncertain 50%
Agree 20%

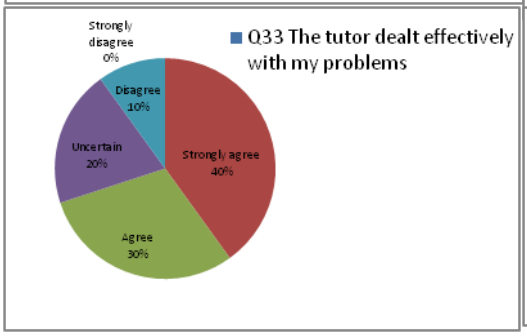

Q28 The material was well organized and presented
Strongly disagree 0%
Disagree 20%
Strongly agree 20%
Agree 20%
Uncertain 40%

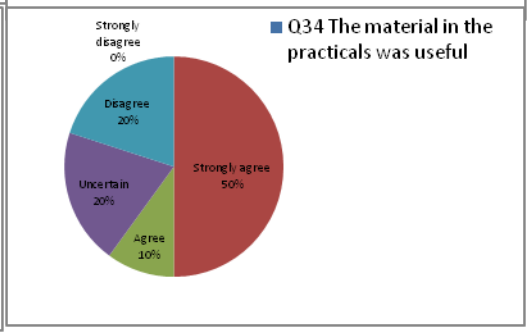

Q29 The instructor was responsive to student need and problems
Disagree 0%
Strongly disagree 0%
Uncertain 40%
Strongly agree 30%
Agree 30%


Q30 Had the instructor been regular throughout the course
Disagree 0%
Strongly disagree 0%
Uncertain 30%
Strongly agree 40%
Agree 30%


Q31 The material in the tutriol was useful
Strongly disagree 0%
Disagree 20%
Strongly agree 40%
Uncertain 20%
Agree 20%

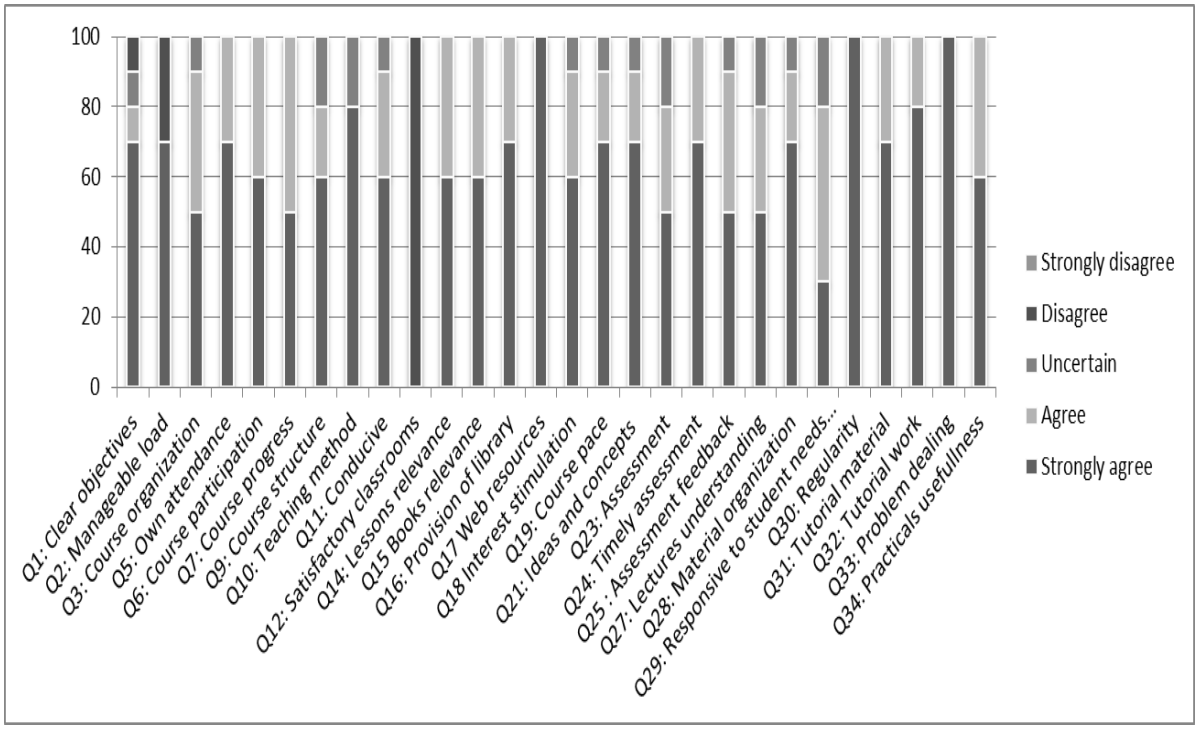

Q32 I was happy with the ammount of work needed for tutorial
Strongly disagree 0%
Disagree 20%
Strongly agree 30%
Uncertain 20%
Agree 30%


Q33 The tutor dealt effectively with my problems
Strongly disagree 0%
Disagree 10%
Uncertain 20%
Strongly agree 40%
Agree 30%


Q34 The material in the practicals was useful
Strongly disagree 0%
Disagree 20%
Uncertain 20%
Strongly agree 50%
Agree 10%

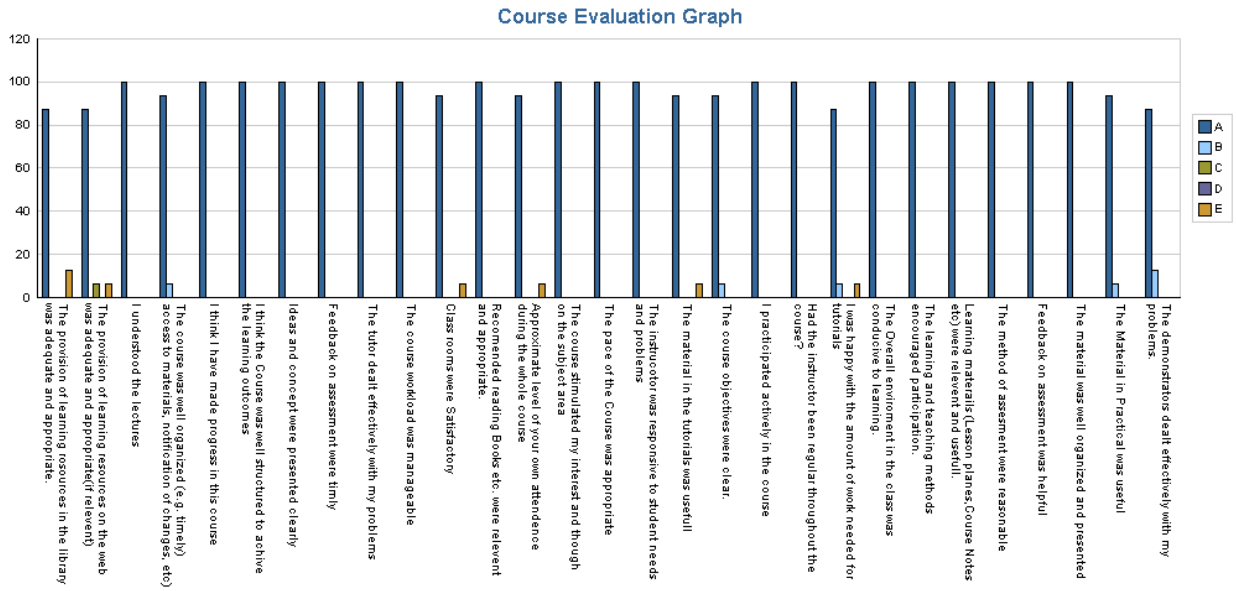
PP- 600 (Teacher: 6)

More than 70% of the students agreed that course objectives were clear, course load was manageable and the course was well organized. They were fully agreed that they participated actively in the course and the course was well structured.20% students showed their uncertainty that the method of assessment was reasonable. Majority of the students were not satisfied with the classrooms.



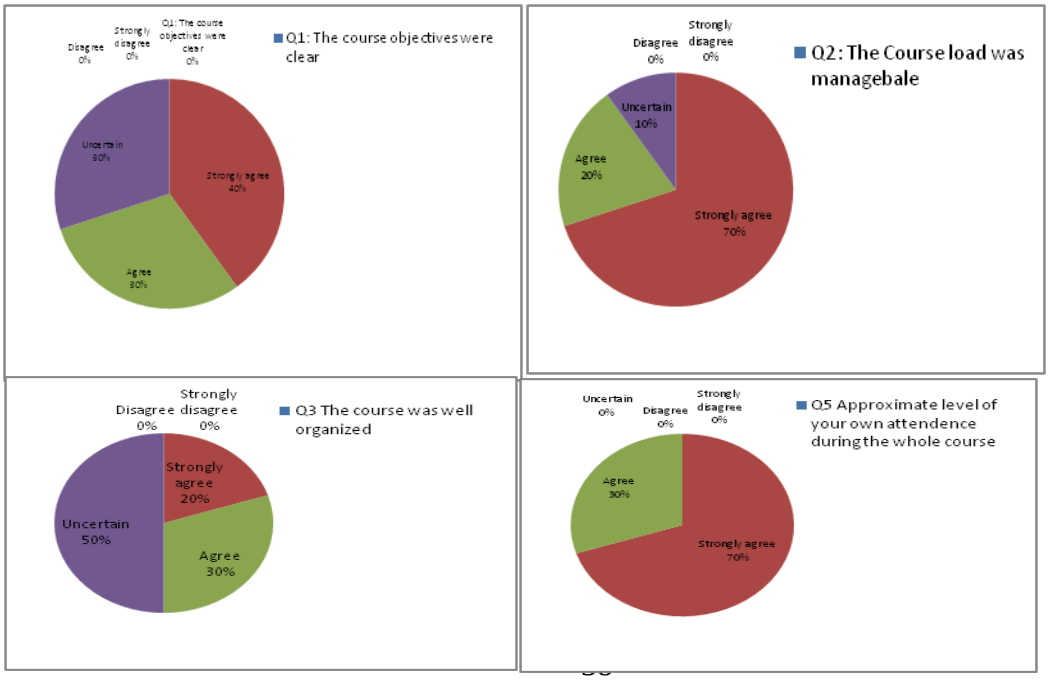
PP-606 (Teacher: 6)

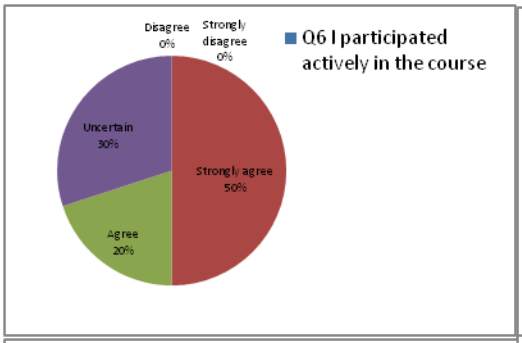
It is evident from the pie charts that most of the students strongly agreed with the statement that course objectives were clear, course work was manageable, learning and teaching method encouraged participationand the course was well organized. Participation of the students was also adequate.

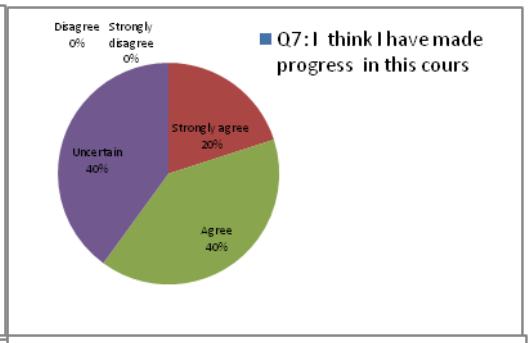


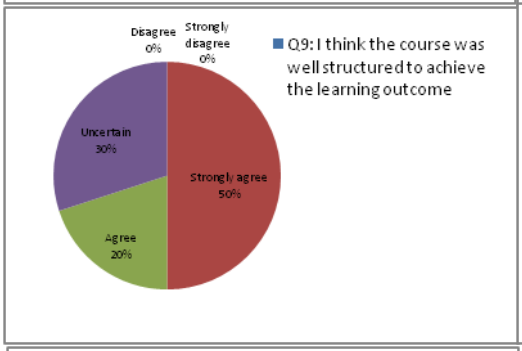
PP-604 (Teacher: 7)

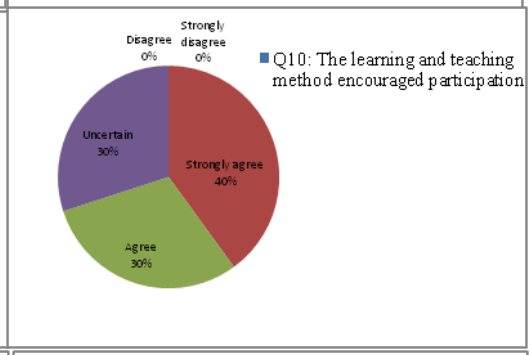
In majority of the cases more than 60% students were agreed and strongly agreed from the inquired statements.Such as the clarity of the course objectives, course load was manageable and they understand lectures fully and feedback was given properly for the assessments. About 14 % of the students uncertain about their appropriate attendance level in the class. A few students expressed their view as uncertain. Details for the rest of the queries are given below in pie charts.

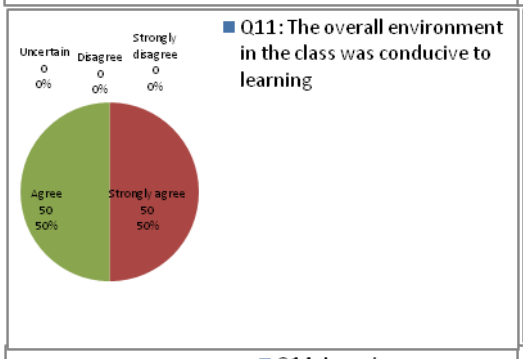


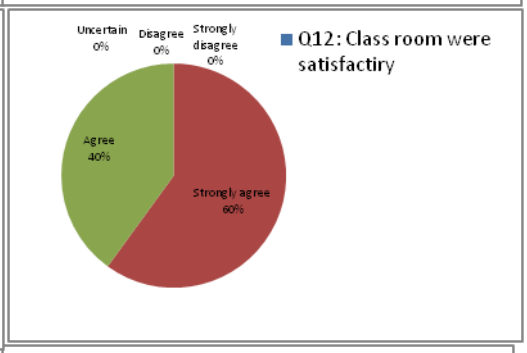

Disagree 0%
Strongly disagree 0%
Uncertain 30%
Strongly agree 50%
Agree 20%
Q6 I participated actively in the course

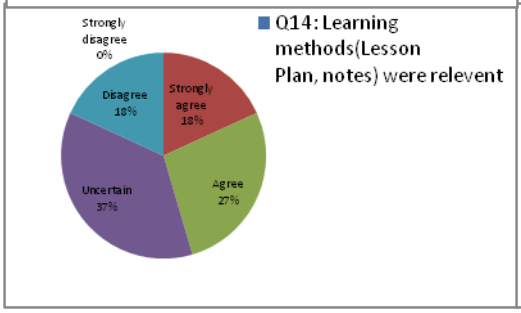

Disagree 0%
Strongly disagree 0%
Uncertain 40%
Strongly agree 20%
Agree 40%
Q7: I think I have made progress in this cours

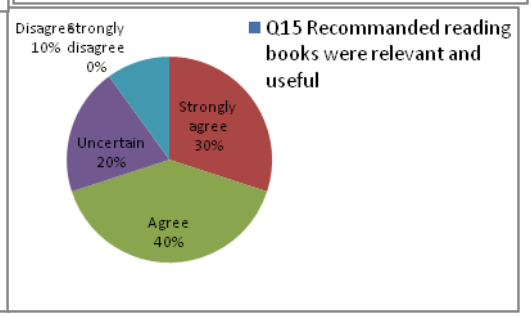

Disagree 0%
Strongly disagree 0%
Uncertain 30%
Strongly agree 50%
Agree 20%
Q9: I think the course was well structured to achieve the learning outcome

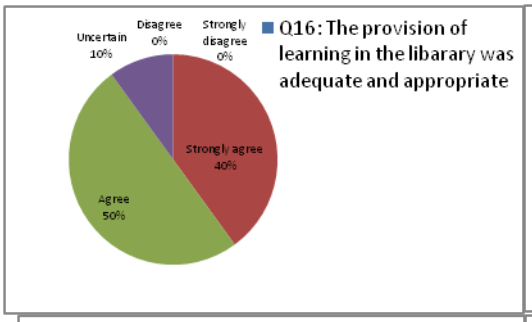

Disagree 0%
Strongly disagree 0%
Uncertain 30%
Strongly agree 40%
Agree 30%
Q10: The learning and teaching method encouraged participation

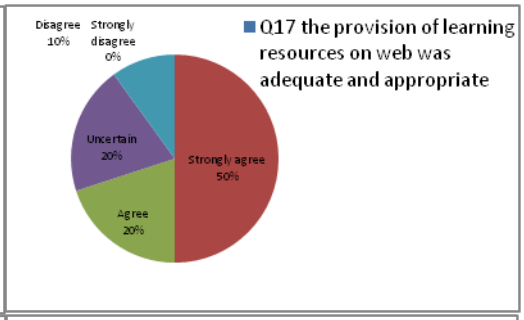

Uncertain 0 0%
Disagree 0 0%
Strongly disagree 0 0%
Agree 50 50%
Strongly agree 50 50%
Q11: The overall environment in the class was conducive to learning

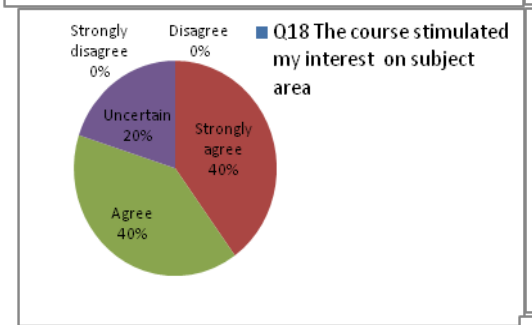

Uncertain 0%
Disagree 0%
Strongly disagree 0%
Agree 40%
Strongly agree 60%
Q12: Class room were satisfactiry

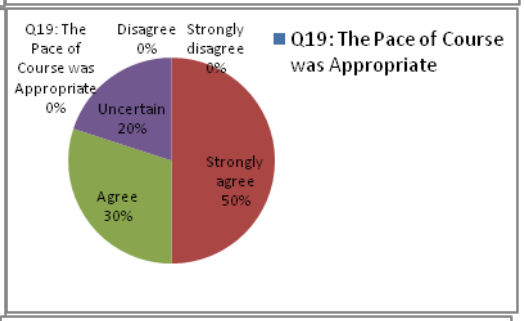

Strongly disagree 0%
Disagree 18%
Strongly agree 18%
Uncertain 37%
Agree 27%
Q14: Learning methods(Lesson Plan, notes) were relevent

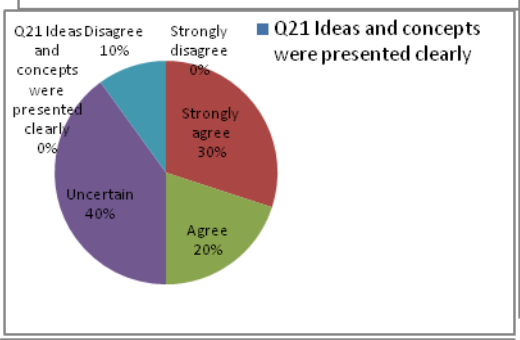

Disagree 10%
Strongly disagree 0%
Uncertain 20%
Strongly agree 30%
Agree 40%
Q15 Recommanded reading books were relevant and useful

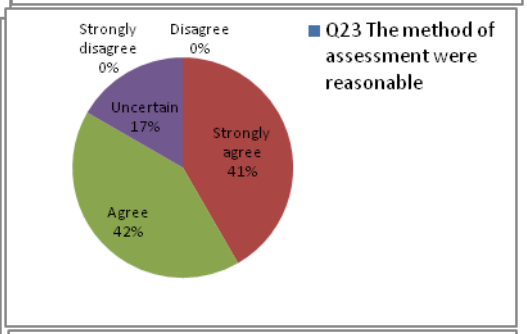

Uncertain 10%
Disagree 0%
Strongly disagree 0%
Strongly agree 40%
Agree 50%
Q16: The provision of learning in the libarary was adequate and appropriate

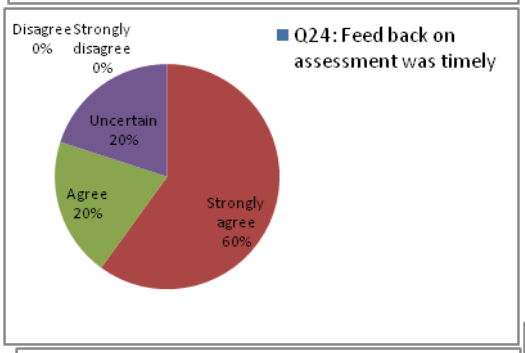

Disagree 10%
Strongly disagree 0%
Uncertain 20%
Strongly agree 50%
Agree 20%
Q17 the provision of learning resources on web was adequate and appropriate

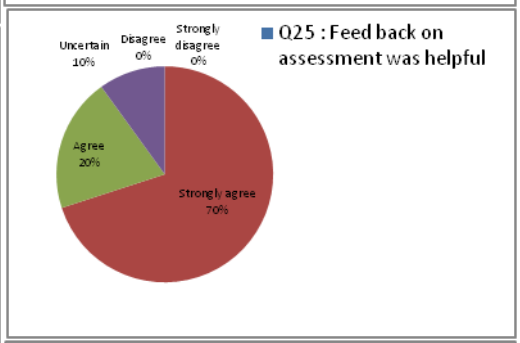

Strongly disagree 0%
Disagree 0%
Uncertain 20%
Strongly agree 40%
Agree 40%
Q18 The course stimulated my interest on subject area

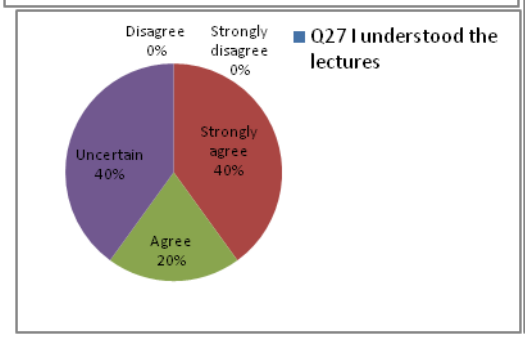

Q19: The Pace of Course was Appropriate 0%
Disagree 0%
Strongly disagree 0%
Uncertain 20%
Strongly agree 50%
Agree 30%
Q19: The Pace of Course was Appropriate

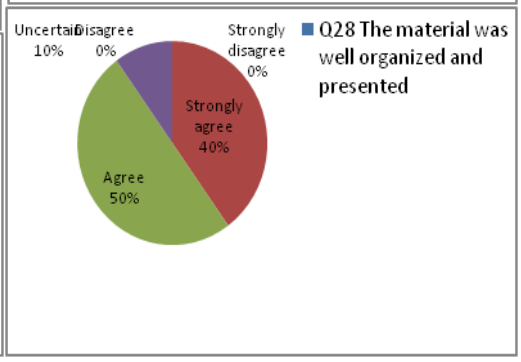

Q21 Ideas and concepts were presented clearly 0%
Disagree 10%
Strongly disagree 0%
Strongly agree 30%
Uncertain 40%
Agree 20%
Q21 Ideas and concepts were presented clearly

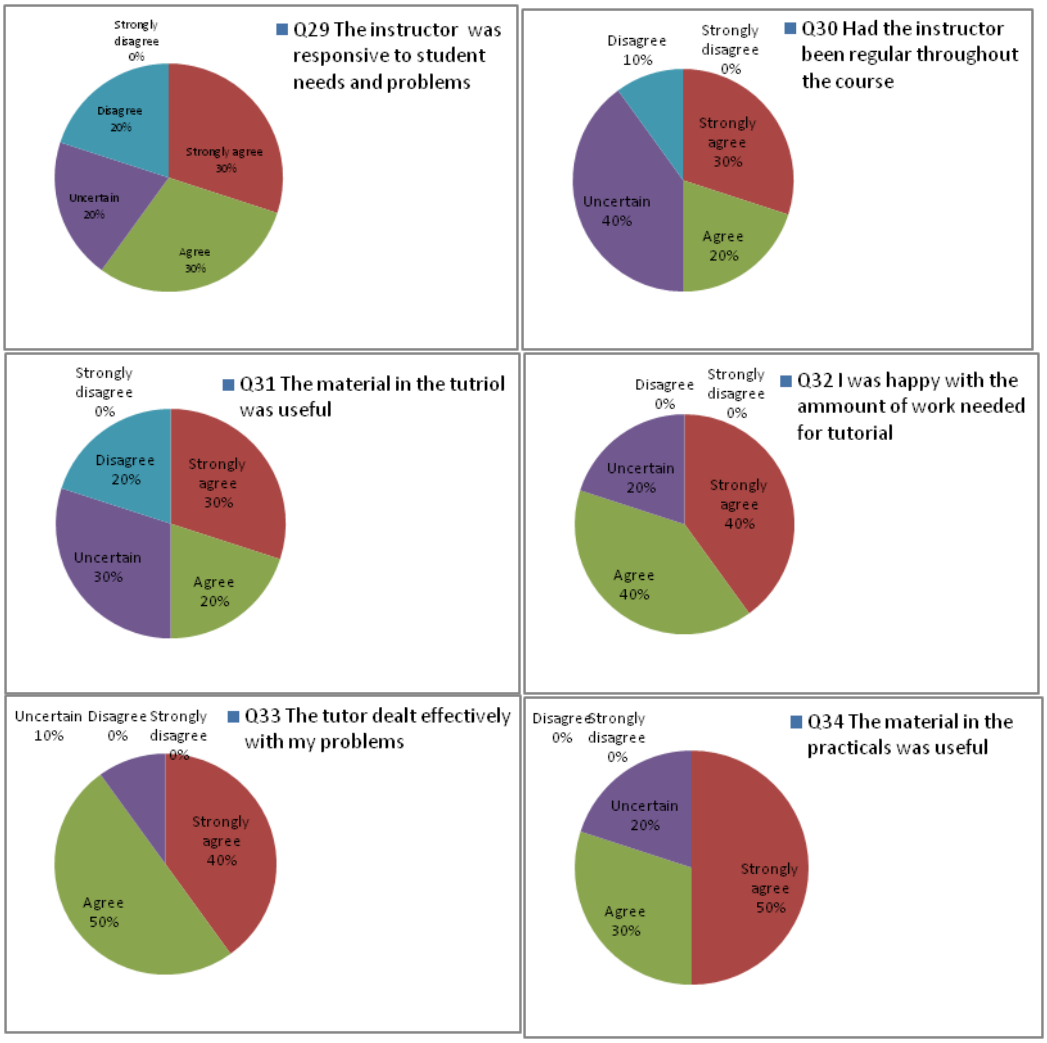

Strongly disagree 0%
Disagree 0%
Uncertain 17%
Strongly agree 41%
Agree 42%
Q23 The method of assessment were reasonable


Disagree 0%
Strongly disagree 0%
Uncertain 20%
Agree 20%
Strongly agree 60%
Q24: Feed back on assessment was timely


Uncertain 10%
Disagree 0%
Strongly disagree 0%
Agree 20%
Strongly agree 70%
Q25 : Feed back on assessment was helpful


Disagree 0%
Strongly disagree 0%
Uncertain 40%
Strongly agree 40%
Agree 20%
Q27 I understood the lectures


Uncertain 10%
Disagree 0%
Strongly disagree 0%
Strongly agree 40%
Agree 50%
Q28 The material was well organized and presented



Alumni Survey Results

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

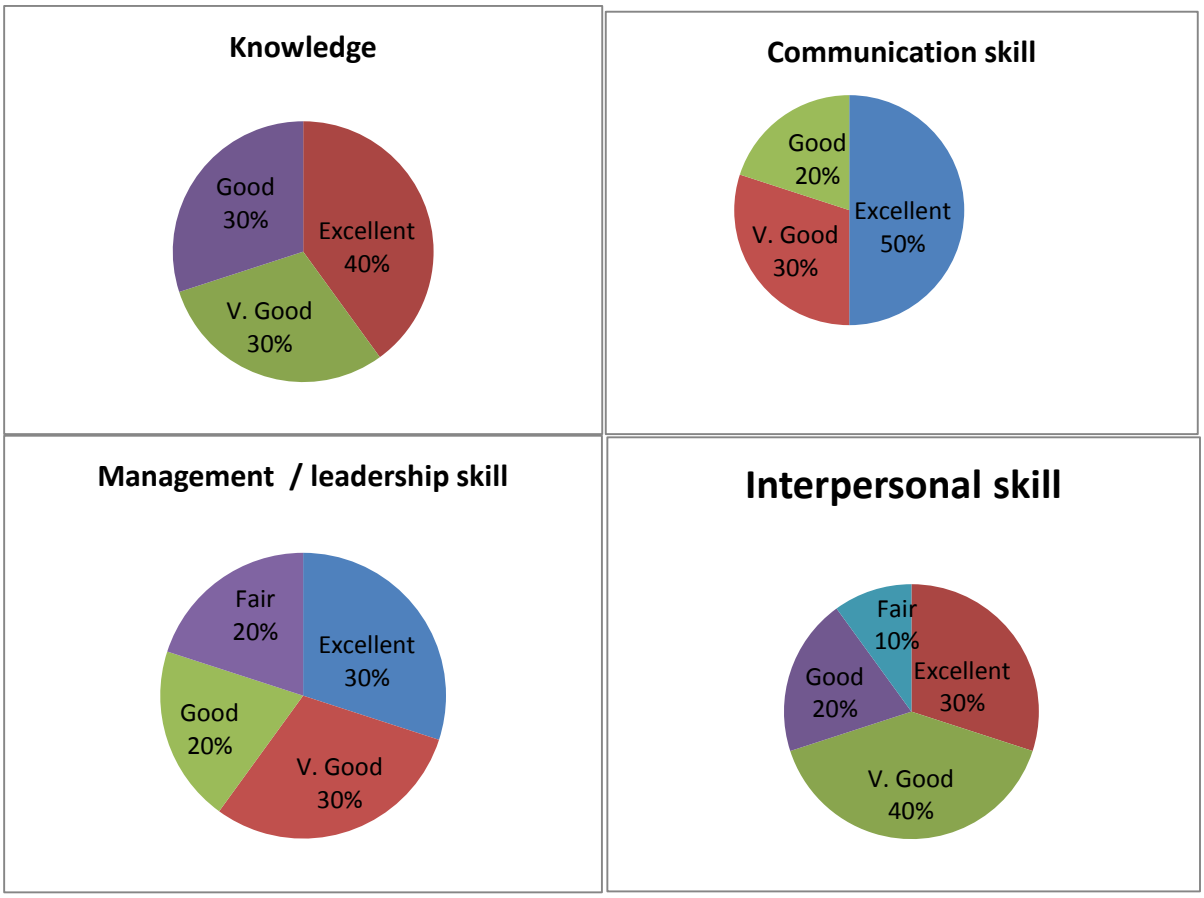


Fig.5 Results of the Alumni Survey Proforma

S.D = Strongly Disagree S.A = Strongly agreed
A = Agreed D = Disagree U.C = Uncertain

It is evident from the pie chart that about 40.40 % heads of the organizations strongly agreed whereas 30.30 % were agreed that the knowledge of the students was up todate. While about 30% were uncertain about the knowledge of the students. The chart regarding communications skills showed that 50.50 % of our students were excellent where as 30 % possessed good communication skill. Excellent interpersonal skill was shown by 30% students and 40.40 % 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 600% of our students possess excellent and very good management/ leadershipskills.

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 exploittheir abilities to recognize future needs.

Survey of Graduating Students

Results of survey of graduating students based on Proforma 3 are given in Fig- 5. The graduating students in last semester were surveyed before the award of degree. More than 48 % students showed their satisfaction regarding all the parameters on average, whereas 25 % of the students surveyed were highly satisfied regarding all information asked. The results of graduating students are summarized and given in Fig. 6.

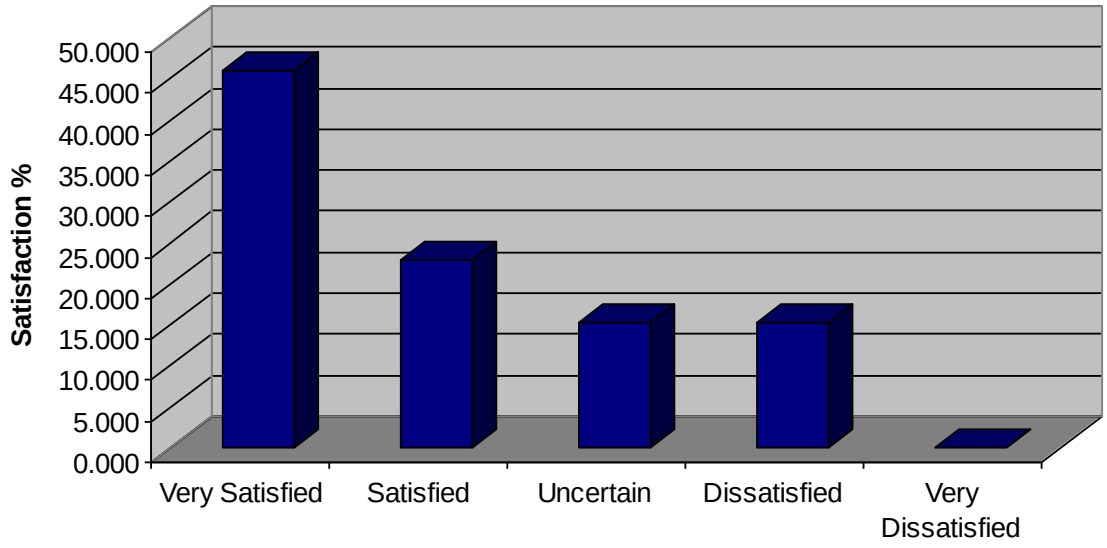


Fig. 6: Survey of Graduating Students

Best Aspects of the Pogramme

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. Phytodoctor 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.

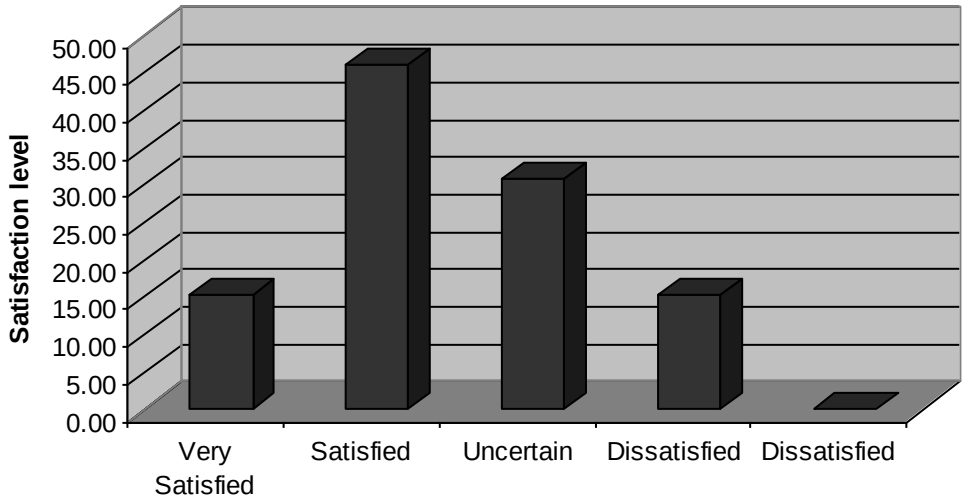


Fig. 7 Affectivity of Internship Experience

Table : 3 The Internship Experience is Effective in Enhancing Professional skills of the graduating students

Sr. No	Parameter	Very satisfied (%)	Satisfied (%)	Uncertain (%)	Dissatisfied (%)	Very dissatisfied (%)
A	Ability to work in teams	63	37	0	0	0
B	Independent thinking	27	55	18	0	0
C	Appreciation of ethical values	20	60	20	8	0
D	Professional development	8	54	23	15	0
E	Time management skills	40	40	20	0	0
F	Judgment	50	40	10	0	0
G	Discipline	33	45	22	0	0
H	The link between theory and practice	30	40	20	10	0

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 reknowned 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 (Annexure 11). 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 surveye 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 282 research papers and 131 other publications and 15 projects in the credit of faculty members of the plant pathology department (Table-4).

Table 4. Present Performance Measures for Research Activities

Faculty	*Publications*	*Projects*
Dr. Abdul Rauf	10	3
Dr Inam ul Haq	03	3
Dr. Tariq Mukhtar	24	1
Dr. Abid Riaz	12	1
Mr. Usman Raja	04	0

Ms. Gulshan Irshad	08	0
Dr. Muhammad Ashfaq	12	1
Dr. Farah Naz	09	1
Total	**82**	**10**

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 5 Quantitative Assessment of the Department at undergraduate level (Last two years)

Sr. #	Particular	No.	Remarks
I	Undergraduates (B.Sc. Hons.) produced	34	95% of them joined M.Sc, 5% did not continue their education.
Ii	Students: Faculty ratio	12:1	
iii	Technical : Non Technical ratio	4:1	
iV	Average grade point	3	Fulfils HEC criteria

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, Annexure 8). Feed back about 21employees 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 bar diagram below. 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 70% (Fig-8). 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.

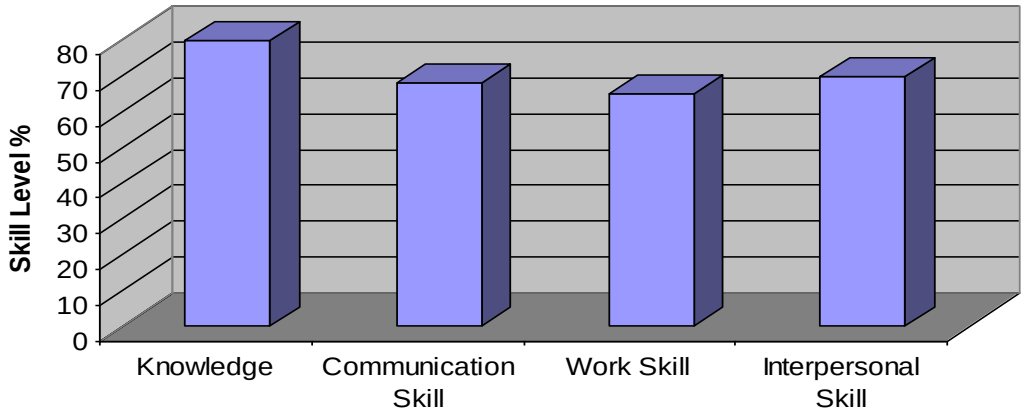


Fig. 8 Employer survey for the determination of students skill level %

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

Department:	Plant Pathology		Faculty:	FC & FS	
Course Code:	PP- 402	Title:	Introduction to plant pathology		
Session:	2013-2014	Semester:	Autumn	Spring ☐	Summer
Credit Value:	3(2-2)	Level:		Prerequisites:	
Name of Course Instructor:	M.Usman Raja	No. of Students:60 Contact Hours:03	Lectures	Other (Please State)	
			Seminars		
Assessment Methods: give precise details (no & length of assignments, exams, weightings etc)		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)

Undergraduate	Originally Registered	%Grade A	%Grade B	%Grade C	D	E	F	No Grade	Withdrawal	Total
No. of Students	60	31.67%	48.33%	16.67%			1.6%		-	60

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 basicthings

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

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

Department:	Plant Pathology		Faculty:	FC & FS	
Course Code:	PP- 606	Title:	Advances in plant pathology		
Session:	2013-2014	Semester:	Autumn	Spring ☐	Summer
Credit Value:	3(2-2)	Level:		Prerequisites:	

Name of Course Instructor:	Dr. Farah Naz	No. of Students:19 Contact Hours:03	Lectures	Other (Please State)
			Seminars	
Assessment Methods: give precise details (no & length of assignments, exams, weightings etc)		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)

Undergraduate	Originally Registered	%Grade A	%Grade B	%Grade C	D	E	F	No Grade	Withdrawal	Total
No. of Students	19	26.3%	63.2%	10.5%	-		-		-	19

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 basicthings

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

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

Department:	Plant Pathology		Faculty:	FC & FS	
Course Code:	PP- 501	Title:	Introduction to nematology		
Session:	2012-2014	Semester:	Autumn ☐	Spring ■	Summer ☐
Credit Value:	3(2-2)	Level:		Prerequisites:	
Name of Course Instructor:	Ms Gulshan Irshad	No. of Students:19 Contact Hours:03	Lectures	Other (Please State)	
			Seminars		
Assessment Methods: give precise details (no & length of assignments, exams, weightings etc)		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)

Undergraduate	Originally Registered	%Grade A	%Grade B	%Grade C	D	E	F	No Grade	Withdrawal	Total
No. of Students	19	42.01%	47.3%	5.26%	-		-		-	19

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

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

Department:	Plant Pathology		Faculty:	FC & FS	
Course Code:	PP- 606	Title:	Introduction to plant pathology		
Session:	2013-2014	Semester:	Autumn	Spring ☐	Summer
Credit Value:	3(2-2)	Level:		Prerequisites:	
Name of Course Instructor:	Dr.M.Ashfaq	No. of Students:19 Contact Hours:03	Lectures	Other (Please State)	
			Seminars		

Assessment Methods: give precise details (no & length of assignments, exams, weightings etc)	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)

Undergraduate	Originally Registered	%Grade A	%Grade B	%Grade C	D	E	F	No Grade	Withdrawal	Total
No. of Students	19	45.5%	56.7%	2.78%					-	19

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 basicthings
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

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

Department:	Plant Pathology		Faculty:	FC & FS	
Course Code:	PP- 506	Title:	Advances in plant pathology		
Session:	2013-2014	Semester:	Autumn	Spring ☐	Summer
Credit Value:	3(2-2)	Level:		Prerequisites:	
Name of Course Instructor:	Dr. Abid Riaz	No. of Students:16 Contact Hours:03	Lectures	Other (Please State)	
			Seminars		
Assessment Methods: give precise details (no & length of assignments, exams, weightings etc)		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)

Undergraduate	Originally Registered	%Grade A	%Grade B	%Grade C	D	E	F	No Grade	Withdrawal	Total
No. of Students	16	12.5%	75.8%	6.9%	-		-		-	16

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 basicthings

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

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

Department:	Plant Pathology		Faculty:	FC & FS	
Course Code:	PP- 401	Title:	Introduction to plant pathogens		
Session:	2013-2014	Semester:	Autumn	Spring ☐	Summer
Credit Value:	2(2-1)	Level:		Prerequisites:	
Name of Course Instructor:	Dr. Usman Raja	No. of Students:39 Contact Hours:02	Lectures	Other (Please State)	
			Seminars		
Assessment Methods: give precise details (no & length of assignments, exams, weightings etc)		Midterm 6 marks (only theory) Final Theory 12 Practical 20 Assignment 02 Total: 40			

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	39	15.38%	15.38%	20.51%	30.77%		17.95 %		-	39

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 basicthings

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

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

Department:	Plant Pathology		Faculty:	FC & FS	
Course Code:	PP- 507	Title:	Advances in plant pathology		
Session:	2013-2014	Semester:	**Autumn**	Spring	Summer
Credit Value:	3(2-2)	Level:		Prerequisites:	
Name of Course Instructor:	Dr. Ashfaq	No. of Students:23 Contact Hours:03	Lectures	Other (Please State)	
			Seminars		
Assessment Methods: give precise details (no & length of assignments, exams, weightings etc)		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)

Undergraduate	Originally Registered	%Grade A	%Grade B	%Grade C	D	E	F	No Grade	Withdrawal	Total
No. of Students	23	9.2%	52.6%	35.4%	4.8		-		-	23

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 basicthings

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

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

Department:	Plant Pathology		Faculty:	FC & FS	
Course Code:	PP- 401	Title:	Introduction to plant pathogen		
Session:	2013-2014	Semester:	**Autumn**	Spring	Summer
Credit Value:	3(2-2)	Level:		Prerequisites:	
Name of Course Instructor:	Dr. Farah Naz	No. of Students:55 Contact Hours:03	Lectures	Other (Please State)	
			Seminars		
Assessment Methods: give precise details (no & length of assignments, exams, weightings etc)		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)

Undergraduate	Originally Registered	%Grade A	%Grade B	%Grade C	D	E	F	No Grade	Withdrawal	Total
No. of Students	55	30.91%	47.27%	16.36%	5.45 %		-		-	55

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 basicthings
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

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

Department:	Plant Pathology		Faculty:	FC & FS	
Course Code:	PP- 402	Title:	Introduction to plant pathology		
Session:	2013-2014	Semester:	Autumn	**Spring**	Summer
Credit Value:	3(2-2)	Level:		Prerequisites:	
Name of Course Instructor:	Dr. Farah Naz	No. of Students:55 Contact Hours:03	Lectures	Other (Please State)	
			Seminars		
Assessment Methods: give precise details (no & length of assignments, exams, weightings etc)		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)

Undergraduate	Originally Registered	%Grade A	%Grade B	%Grade C	D	E	F	No Grade	Withdrawal	Total
No. of Students	55	47.91%	39.27%	12.36%	6.45 %		-		-	55

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 basicthings

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

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

Department:	Plant Pathology		Faculty:	FC & FS	
Course Code:	PP- 605	Title:	Seed and post harvest Pathology		
Session:	2013-2014	Semester:	**Autumn**	Spring	Summer
Credit Value:	3(2-2)	Level:		Prerequisites:	
Name of Course Instructor:	Dr. Gulshan Irshad	No. of Students:19 Contact Hours:03	Lectures	Other (Please State)	
			Seminars		
Assessment Methods: give precise details (no & length of assignments, exams, weightings etc)		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)

Undergraduate	Originally Registered	%Grade A	%Grade B	%Grade C	D	E	F	No Grade	Withdrawal	Total
No. of Students	19	63.1%	15.6%	21.3%			-		-	19

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 basicthings
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

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

Department:	Plant Pathology		Faculty:	FC & FS	
Course Code:	PP- 601	Title:	Plant disease management		
Session:	2013-2014	Semester:	**Autumn**	Spring	Summer
Credit Value:	3(2-2)	Level:		Prerequisites:	
Name of Course Instructor:	Dr. Gulshan Irshad	No. of Students:19 Contact Hours:03	Lectures	Other (Please State)	
			Seminars		
Assessment Methods: give precise details (no & length of assignments, exams, weightings etc)		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)

Undergraduate	Originally Registered	%Grade A	%Grade B	%Grade C	D	E	F	No Grade	Withdrawal	Total
No. of Students	19	21.02%	30.4%	16.36%			-		-	19

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 basicthings
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

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

Department:	Plant Pathology		Faculty:	FC & FS	
Course Code:	PP- 503	Title:	Introduction to plant pathogen		
Session:	2013-2014	Semester:	**Autumn**	Spring	Summer
Credit Value:	3(2-2)	Level:		Prerequisites:	
Name of Course Instructor:	Dr. Tariq Mukhtar	No. of Students 55 Contact Hours:03	Lectures	Other (Please State)	
			Seminars		
Assessment Methods: give precise details (no & length of assignments, exams, weightings etc)		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)

Undergraduate	Originally Registered	%Grade A	%Grade B	%Grade C	D	E	F	No Grade	Withdrawal	Total
No. of Students	55	40.91%	37.27%	26.36%			-		-	55

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 basicthings
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

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

Department:	Plant Pathology		Faculty:	FC & FS	
Course Code:	PP- 604	Title:	Introduction to plant pathogen		
Session:	2013-2014	Semester:	Autumn	**Spring**	Summer
Credit Value:	3(2-2)	Level:		Prerequisites:	
Name of Course Instructor:	Dr. Tariq Mukhtar	No. of Students 55 Contact Hours:03	Lectures	Other (Please State)	
			Seminars		
Assessment Methods: give precise details (no & length of assignments, exams, weightings etc)		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)

Undergraduate	Originally Registered	%Grade A	%Grade B	%Grade C	D	E	F	No Grade	Withdrawal	Total
No. of Students	55	50.91%	27.27%	6.36%			-		-	55

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 taught professors, subjectspecialists 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.

Semester	CGPA
First	0.75
Second	1.00
Third	1.25
Fourth	1.50
Fifth	1.75
Sixth	2.00
Seven	2.25
Eight	2.50

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 6). Detailed course contents of under-graduate and post graduate schemes of studies are given in.

Table: 6 Scheme of studies and Course titles of B. Sc (Hons.) Agriculture

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

Second Semester

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

Third Semester

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

Fourth Semester

Course No.	Course Title	Credit Hours
AGR-402	Field Crop Physiology	3(2-2)
ENT-402	Applied Entomology	3(2-2)
AEE-402	Introduction to Agricultural Extension Education	3(3-0
AS-402	Poultry Husbandry	2(1-2)
PBG-402	Introductory Plant Breeding	3(2-2)
STAT-402	Introduction to Statistics	3(3-0)
PP-402	**Introduction to Plant Pathology**	**3(2-2)**

Fifth Semester

Course No.	Course Title	Credit Hours
General Courses		
AEN-501	Farm Mechanization	2(1-2)
AGRO-501	Arid Zone Agriculture	2(2-0)
SOC-501	Rural Pestral Sociology	2(2-0)
Major Courses		
PP-501	**Introductory Mycology**	**3(2-2)**
PP-503	**Introductory Plant Nematology**	**3(2-2)**
PP-505	**Introduction to Prokaryotes**	**3(2-2)**
PP-507	**Introduction to Plant Viruses**	**3(2-2)**
PP-509	**Beneficial Microorganisms**	**3(2-2)**

Sixth Semester

Course No.	Course Title	Credit Hours
General Courses		
AEN-502	Conservation Engineering and Water Resources Development	2(1-2)
SS-508	Instrumentation and Laboratory Techniques	2(0-4)
Major Courses		
PP-502	**Introduction to Molecular Plant Pathology**	**3(2-2)**
PP-504	**Diseases of Field Crops**	**3(2-2)**
PP-506	**Diseases of Horticultural crops**	**3(2-2)**
PP-508	**Clinical Plant Pathology**	**3(1-4)**
PP-510	**Plant Resistance to Diseases**	**3(2-2)**

Seventh Semester

Course No.	Course Title	Credit Hours
General Courses		
STAT-601	Experimental Designs	2(1-2)
MGT-601	Introduction to Agri. Business Management	2(2-0)
Major Courses		
PP-601	**Principles and Methods of Plant Disease Management**	**3(2-2)**
PP-603	**Range and Forest Pathology**	**2(1-2)**
PP-605	**Seed and Post Harvest Pathology**	**3((2-2)**
PP-609	**Project Planning and Scientific Writing**	**2(1-2)**

Eighth Semester

Course No.	Course Title	Credit Hours
PP-602	Internship Including Report writing and Presentation	15(0-30)

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

Table 10 shows that the curriculum of the plant pathology department is consistent with the program objectives.

Table 7: Courses versusOutcomes

Courses	Outcomes				
	1	2	3	4	5
PP-609	++	++	++	+++	+++
PP-502,	++	+++	+++	+	++
PP-504, PP-506, PP-508, PP-510, PP-601, PP-603, PP-605	+++	+	+++	+	++
PP-401, PP-402, PP-501, PP-503, PP-505, PP-507, PP-509	+++	+++	+	++	++

\+ = 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-8 indicates courses that play vital role in building theoretical background, problem analysis and solution design.

Table 8: Detail of courses representing theoretical background, problem analysis and solution design.

Elements	Courses	Title of the Courses
Theoretical background	PP-401	Introduction to Plant Pathogens
	PP-402	Introduction to Plant Pathology
	PP-501	Introductory Mycology
	PP-503	Introductory Plant Nematology
	PP-505	Introduction to Prokaryotes
	PP-507	Introduction to Plant Viruses

	PP-502	Introduction to Molecular Plant Pathology
	PP-601	Principles and Methods of Plant Disease Management
Problem analysi	PP-504	Diseases of Field Crops
	PP-506	Diseases of Horticultural crops
	PP-603	Range and Forest Pathology
	PP-605	Seed and Post Harvest Pathology
Solution design	PP-509	Beneficial Microorganisms
	PP-508	Clinical Plant Pathology
	PP-510	Plant Resistance to Diseases
	PP-609	Project Planning and Scientific Writing
	PP-602	Internship Including Report writing and Presentation

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

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 apllied 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 onlyone laboratory in the department. The facilities and shortcomings of this laborator are listed as under.

a. **Laboratory Title**: General Laboratoryfor 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.

Standard-4.1: Courses must be offered with sufficient frequency and number for students to complete the program in a timely manner.

- Courses are taught as per criteria of HEC.
- At undergraduate level subjects/courses are offered as per scheme of study provided by the HEC and approved by Academic Council.
- Elective courses are offered as per policy of HEC and the University.

Standard-4.2: Courses in the major area of study must be structured to ensure effective interaction between students, faculty and teaching assistants.

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.

- Courses are structured and decided in the board of studies meeting.
- 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.
- Emphasis is always given for an effective interaction between each section of B.Sc. (Hons) classes.

Standard-4.3: Guidance on how to complete the program must be available to all students and access to qualified advising must be available to make course decisions and career choices.

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:

Mid Examination 30%

Assignments 10%

Final Examination 60%

- Grade points are as follows

Marks Obtained	Grade	Grade point	Remarks
80-100 %	A	4	Excellent
65-79 %	B	3	Good
50-64 %	C	2	Satisfactory
40-49 %	D	1	Pass
Below 40 %	F	0	Fail

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 aretwo professors, two associate professors, two assistant professors, three lecturers and two subject specialists are working in the programme. Out of them, fourfaculty members were abroad: one assistant professor for Ph.D studies, onelecturer one assistant professor for post doctorate studies and oneprofessor on ex-Pakistan leave. Their field of specialization is mycology, plant virology, phytonematology and plant bacteriology (Table 09).

Table 09.Faculty Distribution by Program Areas in Plant Pathology

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

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 membersare 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 09. Their satisfaction level upon the querries pertaining in proforma 5 revealed that all the teachers wer found satisfied over most of the parameters. However, they had concern that the laboratory conditions should be improved, level of monitoring, cooperation with colleagues and of teachers also need to be addressed.

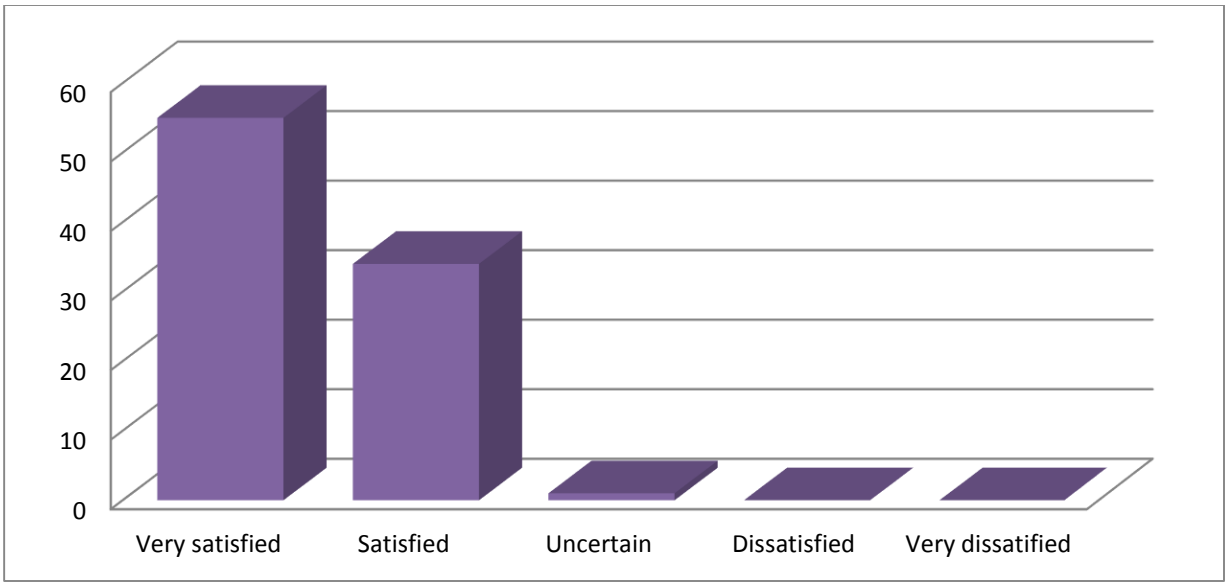


Fig. 9 Faculty Survey

Criterion 7: Institutional Facilities

Among the institutional facilities, the institution must have the amenitiesto support new trends in learning such as liberary, 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 bookswith 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 roomsand offices must be adequate to enable faculty to carry out their responsibilities**.**

Standrd wise description of this criterion is given a 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, ithas 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 wasjust Rs 32,000/- Rs., which was amplifiedupto 4,20,000/- Rs. in 2009-10. Which has improved the financial condition of the department and the department can nowpurchase 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 weaksuch 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 up gradation 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

Since inception of undergraduate degree 1986, the department purposefully designs all undergraduate courses both theoretically and practically to achieve basic objective which is to train young students to tackle plant diseases. Plant diseases are the biggest pitfalls in sustainable agricultural production all over the world. Pakistan whose economy is agro-based and provide livelihood to more than 65% of total can't afford plant diseases. Therefore, the basic training starts to prime the young minds about the importance of plant diseases and its devastating effects on daily life and also on national exchequer. Once they realized the importance of subject in agriculture they will put more effort to learn it. Therefore, at undergraduate level students were given exposure to different disciplines within plant pathology i.e. mycology, plant virology, plant nematology, plant bacteriology along other peripheral courses.

The department through its own board of studies continuously monitored the performance of faculty members and appointed under-graduate advisor among faculty members to help young students both in studies and in extra-curricular activities. Phyto-doctor forum is established to provide a forum to young pathology students to discuss various academic and social issues in informal environment. These initiatives bear good results which are depicted from student evaluation of courses and faculty. Students ranked faculty performance between 75-90% in different parameters such as lecture preparation, punctuality, interaction, command on subject etc. We see very rare disagreement among students regarding faculty performance but still there are few things which needed to addressed and that includes a more practical or field oriented approach. There are few more things which pointed out during student surveys which are more bench space and improvement in laboratory and lecture room facilities. It is pertinent to mention that students even at undergraduate level interested to seek latest development in subject which means faculty through teaching created an urge in them for learning and they by and large not felt the discipline is boring. However, their genuine concern about to study plant diseases in real time must be addressed.

It is plausible to mention that plant pathology undergraduates from department have all the necessary scientific and interpersonal skills to take the challenges in lab and field and this is reflected from alumni surveys. Most of organizations where they are currently

doing jobs are happy with their skills and similarly undergraduate alumni also felt confident to work in market after spending two years in department.

Department religiously work within the frame work provided by HEC curriculum committee and offered and design courses according to HEC outlines with necessary recent updates and also keeping in mind the major pathological challenges of Pothowar region. Department board of studies consistently follows the recent developments in plant pathology discipline and after discussion advice the faculty to discuss them in classes and dissect in labs. Student performance fairly judged through oral and written exams, quizzes, assignments and presentations. Feed backs from students suggest that undergraduates are completely satisfied with markings of all faculty members of department. Furthermore, students were encouraged to seek latest literature through internet and all the labs are well equipped with wifi which is connected to University main internet server. To snub the plagiarism and to encourage the ethical writing students are properly guided by faculty and there is one whole course dedicated on report writing and literature review.

Faculty is also experienced and published papers in journals of impact factor and peer reviewed. This also has trickledown effect on undergraduates as they are asked to work on a particular issue for whole one semester under the supervision of faculty member.

However, as the enrolment is increasing which needs more infrastructures in terms of lecture rooms and labs. Though study tours to University research farm at KOONT gave good exposure to students to agriculture in field but more tours to sister organizations will also be helpful for better exposure to disease problems and people who are working on them.

Conclusions:

Performance of the department may be further improved through following steps.

1. There are not sufficient facilities in the existing class rooms. It is necessary to provide favorable environment for student’s learning in the class rooms.
2. 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. Recently the department has been granted a

project strengthening of the program. It is hoped that the department will be able to provide more facilities to the graduate and post graduate students.

3. There is also a need to improve level of cooperation among the faculty members as well as students for better results.
4. Faculty members have pointed out that salaries and compensation may be improved for more satisfactory job performance.
5. There is also a need to improve mix of research and teaching proportion to produce professionally sound graduates.
6. At present there is no arrangement for professional and behavioral training of the supporting staff. Such sort of training will improve their utility in carrying out research and teaching quality.
7. 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.
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. The survey also revealed that two of the faculty members are sent abroad for professional trainings through HEC, which has enabled them to carryout research on molecular aspects of plant pathology. HEC is requested to arrange this type of foreign trainings for the rest of the faculty members, so that they can arm themselves with the new and adnanced techniques which may be helpful for improving skills, broadening vision and combating the plant diseases.

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

Course Content and Organization	Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
1. The course objectives were clear	☐	☐	☐	☐	☐
2. The Course workload was manageable	☐	☐	☐	☐	☐
3. The Course was well organized (e.g. timely access to materials, notification of changes, etc.)	☐	☐	☐	☐	☐
4. Comments					

Student Contribution					
5. Approximate level of your own attendance during the whole Course	☐<20%	☐21-40%	☐41-60%	☐61-80%	☐>81%
	Strongly Agree	Agree	uncertain	Disagree	Strongly Disagree
6. I participated actively in the Course	☐	☐	☐	☐	☐
7. I think I have made progress in this Course	☐	☐	☐	☐	☐
8. Comments					

Learning Environment and Teaching Methods	Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
9. I think the Course was well structured to achieve the learning outcomes (there was a good balance of lectures, tutorials, practical etc.)	☐	☐	☐	☐	☐
10. The learning and teaching methods encouraged participation.	☐	☐	☐	☐	☐
11. The overall environment in the class was conducive to learning.	☐	☐	☐	☐	☐
12. Classrooms were satisfactory	☐	☐	☐	☐	☐
13. Comments					

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

Course Content and Organization	Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
1. The course objectives were clear	☐	☐	☐	☐	☐
2. The Course workload was manageable	☐	☐	☐	☐	☐
3. The Course was well organized (e.g. timely access to materials, notification of changes, etc.)	☐	☐	☐	☐	☐
4. Comments					

Student Contribution					
5. Approximate level of your own attendance during the whole Course	☐<20%	☐21-40%	☐41-60%	☐61-80%	☐>81%
	Strongly Agree	Agree	uncertain	Disagree	Strongly Disagree
6. I participated actively in the Course	☐	☐	☐	☐	☐
7. I think I have made progress in this Course	☐	☐	☐	☐	☐
8. Comments					

Learning Environment and Teaching Methods	Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
9. I think the Course was well structured to achieve the learning outcomes (there was a good balance of lectures, tutorials, practical etc.)	☐	☐	☐	☐	☐
10. The learning and teaching methods encouraged participation.	☐	☐	☐	☐	☐
11. The overall environment in the class was conducive to learning.	☐	☐	☐	☐	☐
12. Classrooms were satisfactory	☐	☐	☐	☐	☐
13. Comments					

Learning Resources	Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
14. Learning materials (Lesson Plans, Course Notes etc.) were relevant and useful.	☐	☐	☐	☐	☐
15. Recommended reading Books etc. were relevant and appropriate	☐	☐	☐	☐	☐
16. The provision of learning resources in the library was adequate and appropriate	☐	☐	☐	☐	☐
17. The provision of learning resources on the Web was adequate and appropriate (if relevant)	☐	☐	☐	☐	☐
18 Comments					

Quality of Delivery	Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
19. The Course stimulated my interest and thought on the subject area	☐	☐	☐	☐	☐
20. The pace of the Course was appropriate	☐	☐	☐	☐	☐
21. Ideas and concepts were presented clearly	☐	☐	☐	☐	☐
22.Comments					

Assessment	Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
23. The method of assessment were reasonable	☐	☐	☐	☐	☐
24. Feedback on assessment was timely	☐	☐	☐	☐	☐
25. Feedback on assessment was helpful	☐	☐	☐	☐	☐
26. Comments					

Additional Core Questions

Instructor / Teaching Assistant Evaluation	Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
27. I understood the lectures	☐	☐	☐	☐	☐
28. The material was well organized and presented	☐	☐	☐	☐	☐
29. The instructor was responsive to student needs and problems	☐	☐	☐	☐	☐
30. Had the instructor been regular throughout the course?	☐	☐	☐	☐	☐

Tutorial	Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
30. The material in the tutorials was useful	☐	☐	☐	☐	☐
31. I was happy with the amount of work needed for tutorials	☐	☐	☐	☐	☐
32. The tutor dealt effectively with my problems	☐	☐	☐	☐	☐

Practical	Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
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

Department:			Faculty:		
Course Code:		Title:			
Session:		Semester:	Autumn ☐	Spring ☐	Summer ☐
Credit Value:		Level:		Prerequisites:	
Name of Course Instructor:		No. of Students	Lectures	Other (Please State)	
		Contact Hours	Seminars		
Assessment Methods: give precise details (no & length of assignments, exams, weightings etc)					

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										
Post-Graduate	Originally Registered	%Grade A	%Grade B	%Grade C	D	E	No Grade		Withdrawal	Total
No. of Students										

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:	_____ *(Course Instructor)*	Date: _____
Name:	_____ *(Head of Department)*	Date: _____

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 you 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: _____

Proforma 6

SURVEY OF DEPARTMENT OFFERING Ph.D. PROGRAMS

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

1	**General Information:**	
1.1	Name of Department	
1.2	Name of Faculty	
1.3	Date of initiation of Ph.D. program	
1.4	Total number of academic journals subscribed in area relevant to Ph.D. program.	
1.5	Number of Computers available per Ph.D. student	
1.6	Total Internet Bandwidth available to all the students in the Department.	
2	**Faculty Resources:**	
2.1	Number of faculty members holding Ph.D. degree in the department.	
2.2	Number of HEC approved Ph.D. Advisors in the department.	
3	**Research Output:**	
3.1	Total number of articles published last year in International Academic Journals that are authored by faculty members and students in the department.	
3.2	Total number of articles published last year in Asian Academic Journals that are authored by faculty members and students in the department.	
3.3	Total number of ongoing research projects in the department funded by different organizations	
3.4	Number of post-graduate students in the department holding scholarships/fellowships.	
3.5	Total Research Funds available to the Department from all sources.	
3.6	Number of active international linkages involving exchange of researchers/students/faculty etc. (Attach Details).	

4	**Student Information:**	
4.1	Number of Ph.D. degrees conferred to date to students from the Department during the past three academic years.	
4.2	Number of Ph.D. students currently enrolled in the department.	
4.3	Ratio of number of students accepted to total number of applicants for Ph.D. Program.	
5	**Program Information**	
5.1	Entrance requirements into Ph.D. Program (M.Sc. / M.Phil.) Indicate subjects or M.Sc. / M.Phil.	
5.2	Is your Ph.D. program based on research only? (Y/N)	
5.3	Maximum number of years in which a Ph.D. degree has to be completed after initial date of enrollment in Ph.D. program.	
5.4	Total number of post M.Sc. (16 year equivalent) courses required for Ph.D.	
5.5	Total number of M.Phil. level courses taught on average in a Term / Semester.	
5.6	Total number of Ph.D. level courses taught on average in a Term / Semester.	
5.7	Do your students have to take/write:	
	a. Ph.D. Qualifying examination (Y/N)	
	b. Comprehensive examination (Y/N)	
	c. Research paper in HEC approved Journal	
	d. Any other examination (Y/N)	
5.8	Total number of International examiners to which the Ph.D. dissertation is sent.	
5.9	How is the selection of an examiner from technologically advanced countries carried out?	
5.10	Is there a minimum residency requirement (on campus) for award of Ph.D. degree?	
6	**Additional Information**	
6.1	Any other information that you would like to provide.	

Proforma 7

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

I. 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					
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)

_____

_____

_____

_____

_____

_____

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.

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

I.	**Knowledge.**					
	1. Math, Science, Humanities and professional disciplines, (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. Computer knowledge.	(A)	(B)	(C)	(D)	(E)
II.	**Communication 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. Leadership	(A)	(B)	(C)	(D)	(E)
	3. Independent thinking	(A)	(B)	(C)	(D)	(E)
	4. Motivation	(A)	(B)	(C)	(D)	(E)
	5. Reliability	(A)	(B)	(C)	(D)	(E)
	6. Appreciation of ethical values	(A)	(B)	(C)	(D)	(E)
IV.	**Work skills**					
	1. 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 for the preparation of graduates who will enter your field. Did you know as to what to expect from graduates?

_____

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VI. **Information About Organization**

1. Organization Name_____
2. Type of Business_____
3. Number of Graduates (specify the program) in your Organization:

Proforma 9

Faculty Resume

Name	
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 Postdocs Undergraduate Students *Honour Students*	*List supervision of graduate students, postdocs and undergraduate honors theses showing:* **Years Degree Name** Show other information as appropriate and list membership on graduate degree committees.
Service Activity	*List University and public service activities.*

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

Publications	*List publications in standard bibliographic format with earliest date first.* o Manuscripts accepted for publication should be included under appropriate category as "in press;" o 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).
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

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

Comments:
Instructor:_____

_____

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Course:_____

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Resume of Faculty Members

Faculty Resume-1

Name	**Prof. Dr. Tariq Mukhtar**
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:

Date, Title, Institution.

Date		**Title**	**Institution**
From	**To**		
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)

Graduate Students
Postdocs
Undergraduate Students

Honour Students

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

Years Degree Name

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

Years	Degree	Name	Contributed as
2013	M.Sc. Hons	Sana Nazir	Supervisor
2013	M.Sc. Hons	Nasira Perveen	Supervisor
2014	M.Sc. Hons	Muneeba Arooj	Supervisor
2014	M.Sc. Hons	Muhammad Saeed	Supervisor
2014	M.Sc. Hons	Waqar-ul-Amin	Supervisor
2010	Ph.D.	Umer Iqbal	Supervisor
2011	Ph.D.	M. Arshad Hussain	Supervisor
2012	Ph.D.	M. Zameer Kayani	Supervisor

Service Activity

List University and public service activities.

- 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

1. Batool, M., **T. Mukhtar** and H. Butt. **2014**. First report of *Diplocarpon mespili* on loquat (*Eriobotrya japonica*) in Pakistan. **Österreichische Zeitschrift für Pilzkunde (Austrian Journal of Mycology), 23: 143-147.**

2. **Mukhtar, T**., M. A. Hussain, M. Z. Kayani and M. N. Aslam. **2014.** Evaluation of resistance to root-knot nematode (*Meloidogyne incognita*) in okra cultivars. **Crop Protection, 56: 25-30. [Impact factor = 1.539]**
3. *Iqbal, U. and* ***T. Mukhtar, 2014.*** *Morphological and pathogenic variability among Macrophomina phaseolina isolates associated with mungbean (Vigna radiata L.) Wilczek from Pakistan.* ***The Scientific World Journal, 2014, Article ID 950175, 9 pages,*** **http://dx.doi.org/10.1155/2014/950175. [Impact factor = 1.723]**.
4. Nasir, M., S. M. Mughal, **T. Mukhtar**, M. Z. Awan. **2014**. Powdery mildew of mango: a review of ecology, biology, epidemiology and management. **Crop Protection, 64: 19-26. [Impact factor = 1.539]**.
5. Ashfaq, M., M. A. Khan, **T. Mukhtar** and S. T. Sahi. **2014**. Role of mineral metabolism and some physiological factors in resistance against urdbean leaf crinkle virus in blackgram genotypes. **International Journal of Agriculture and Biology, 16 (1): 189-194. [Impact factor = 0.902]**.
6. Mehboob, N., M. J. Asad, M. Asgher, M..Gulfraz, **T. Mukhtar** and R. T. Mahmood**. 2014.** Exploring thermophilic cellulolytic enzyme production potential of *Aspergillus fumigates* by the solid-state fermentation of wheat straw. **Applied Biochemistry and Biotechnology**, **172 (7): 3646-3655. [Impact Factor = 1.893]**
7. Iqbal, U., **T. Mukhtar** and S. M. Iqbal. **2014.** *In vitro* and *in vivo* evaluation of antifungal activities of some antagonistic plants against charcoal rot causing fungus, *Macrophomina phaseolina*. **Pakistan Journal of Agricultural Sciences**, **51 (3): 689-694. [Impact Factor = 1.24].**
8. Ashfaq, M., S. Iqbal, **T. Mukhtar** and H. Shah. **2014.** Screening for resistance to cucumber mosaic cucumovirus in chilli pepper. **Journal of Animal and Plant Sciences**, **24 (3): 791-795. [Impact Factor = 0.638].**
9. Hussain, M. A., **T. Mukhtar,** M. Z. Kayani. **2014.** Characterization of susceptibility and resistance responses to root-knot nematode (*Meloidogyne incognita*) infection in okra germplasm. **Pakistan Journal of Agricultural Sciences**, **51 (2): 319-324. [Impact Factor = 1.24].**
10. **Mukhtar, T.,** M. Z. Kayani and M. A. Hussain. **2013**. Nematicidal activities of *Cannabis sativa* L. and *Zanthoxylum alatum* Roxb. against *Meloidogyne incognita*. **Industrial Crops and Products. 42: 447-453. [Impact factor = 3.208]**.
11. Kayani, M. Z., **T. Mukhtar,** M. A. Hussain, and M. I. Haque. **2013**. Infestation assessment of root-knot nematodes (*Meloidogyne* spp.) associated with cucumber in the Pothowar region of Pakistan. **Crop Protection**, **47: 49-54. [Impact factor = 1.402]**.
12. **Mukhtar, T.,** M. Z. Kayani and M. A. Hussain. **2013**. Response of selected cucumber cultivars to *Meloidogyne incognita*. **Crop Protection 44: 13-17. [Impact factor = 1.402]**.
13. **Mukhtar, T.,** M. A. Hussain and M. Z. Kayani. **2013.** Biocontrol potential of *Pasteuria penetrans*, *Pochonia chlamydosporia*, *Paecilomyces lilacinus* and *Trichoderma harzianum* against *Meloidogyne incognita* in okra. **Phytopathologia Mediterranea**, **52 (1): 66-76. [Impact factor = 1.398]**.
14. **Mukhtar, T.,** I. Arshad, M. Z. Kayani, M. A. Hussain, S. B. Kayani, A. M. Rahoo and M. Ashfaq. **2013**. Estimation of damage to okra (*Abelmoschus esculentus*) by root-knot

disease incited by Meloidogyne incognita. **Pakistan Journal of Botany, 45 (3): 1023-1027. [Impact factor = 0.907].**

15. Mahmood-ul-Hassan, Z. Akram, S. Ajmal, **T. Mukhtar**, S. Nasim, G. Shabbir and Y. Zafar. **2013**. Highly efficient *in vitro* root induction in peanut by mechanical stress method. **Journal of Animal and Plant Sciences**, **23 (2): 425-429. [Impact factor = 0.585]**.

16. *Zia-Ul-Hussnain S., C. A. Rauf, M. I. Haque, S. Afghan,* ***T. Mukhtar****,* F. Naz, M. K. N. Shah, and A. Shahzad. ***2013****. Comparison of DAC-ELISA and Tissue Blot Immunoassay for the Detection of Acidovorax avenae subsp. avenae, causal agent of Red Stripe of Sugarcane.* ***Journal of Plant Pathology & Microbiology, 4:172 doi: 10.4172/2157-7471.1000172.***

17. Parveen, N., **T. Mukhtar,** M. F. Abbas and C. A. Rauf. **2013**. Management of root knot nematode with marigold (*Tagetes erecta* L.) and antagonistic fungus (*Paecilomyces lilacinus* (Thom) Samson) in tomato crop. **International Journal of Biology and Biotechnology, 10 (1): 61-66.**

18. Kayani, M. Z., **T. Mukhtar** and M. A. Hussain. **2012**. Evaluation of nematicidal effects of *Cannabis sativa* L. and *Zanthoxylum alatum* Roxb. against root-knot nematodes, *Meloidogyne incognita*. **Crop Protection, 39: 52-56. [Impact factor = 1.402]**.

19. Kayani, M. Z., **T. Mukhtar** and M. A. Hussain. **2012**. Association of root-knot nematodes (*Meloidogyne* spp.) with cucumber in the Pothowar region of the Punjab province of Pakistan. **International Journal of Biology and Biotechnology, 9 (1-2): 23-29.**

20. Kayani, M. Z., **T. Mukhtar,** M. A. Hussain, M. I. Haque and R. Perveen. **2012**. Incidence and severity of root-knot nematodes (*Meloidogyne* spp.) in district Rawalpindi. **Pakistan Journal of Phytopathology**. **24 (2): 122-128.**

21. Begum, N., M. I. Haque, **T. Mukhtar**, S. M. Naqvi, J. F. Wang. **2012**. Status of bacterial wilt caused by *Ralstonia solanacearum* in Pakistan. **Pakistan Journal of Phytopathology. 24 (1): 11-20.**

22. Hussain, M. A**., T. Mukhtar,** M. Z. Kayani, M. N. Aslam and M. I. Haque**. 2012.** A survey of okra (*Abelmoschus esculentus*) in the Punjab province of Pakistan for the determination of prevalence, incidence and severity of root-knot disease caused by *Meloidogyne* spp. **Pakistan Journal of Botany, 44 (6): 2071-2075. [Impact factor = 0.907].**

23. Irshad, U., **T. Mukhtar**, M. Ashfaq, M. Z. Kayani, S. B. Kayani, M. Hanif and S. Aslam. **2012**. Pathogenicity of citrus nematode (*Tylenchulus semipenetrans*) on *Citrus jambhiri*. **Journal of Animal and Plant Sciences**, **22 (4): 1014-1018. [Impact factor = 0.585]**.

Books

Papers published in refereed conference proceedings:

67. Ahmad, R., M. A. Khan, T. Mukhtar and N. Javed. 2007. Infestation of citrus orchards by Citrus nematode (Tylenchulus semipenetrans) and screening of some rootstocks for resistance or susceptibility. Proceedings of the International Symposium on Prospects of Horticultural Industry in Pakistan. 28th to 30th March, 2007. Institute of Horticultural Sciences, University of Agriculture, Faisalabad. pp. 165-169.

68. Mukhtar,T., R. Ahmad and M. A. Khan. 2006. Studies on the distribution, ecology and management of Citrus Nematode, Tylenchulus semipenetrans. Proceedings of International Symposium on Sustainable Crop Improvement and Integrated Management. September 14-16, 2006. pp. 223-230.
69. Mukhtar,T., R. Ahmad and N. Javed, 2001. Control of Meloidogyne javanica by two antagonistic plants and a nematophagous fungus and effects of antagonistic plants on the activity of fungus. Proceedings of 3rd Conference of Plant Pathology, pp. 129-132.
70. Javed, N., S. R. Gowen, T. Mukhtar and M. Ashfaq. 2002. Effect of neem products on hatching, mobility, mortality and development of juveniles of Meloidogyne javanica. Proceedings of National Symposium of Nematology, 67-75.
71. Javed, N., R. Ahmad and T. Mukhtar. 2001. Nematode control: biological approach. Proceedings of 3rd Conference of Plant Pathology, pp. 116-121.A
72. Mukhtar, T., R. Ahmad and H. U. Khan. 1999. Effect of leaf extracts of some plants on the growth of nematophagous fungus Verticillium chlamydosporium. Proceedings of 2nd Conference of Plant Pathology, 179-182.
73. Mukhtar,T., R. Ahmad and S. R. Gowen. 1999. Effect of a cropping sequence on the management of Meloidogyne javanica and Pasteuria penetrans build up. Proceedings of 2nd Conference of Plant Pathology, pp. 175-178.

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

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

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

Selected Professional Presentations

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Annexure -I

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.

Date From	Date To	Title	Institution
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

Graduate Students
Postdocs
Undergraduate Students

Honour Students

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

Years Degree Name

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

Years	Degree	Name	Contributed as
2014	M.Sc.(Hon)	Adeela Altaf	Supervisor
2014	M.Sc.(Hon)	Muhammad Sufiyan	Supervisor
2013	M.Sc.(Hon)	Shagufta Bibi	Supervisor
2013	M.Sc.(Hon)	Sundas Shakoor	Supervisor
2012	M.Sc.(Hon)	Farooq Azam	Supervisor
2012	M.Sc.(Hon)	Muhammad Nasir	Supervisor
2012	M.Sc.(Hon)	Saima Sadiq	Supervisor

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

1. Khan, N.A., M. Ajmal, M. Inam-ul-haq, N. Javed, M. Asif Ali, Rana Binyamin and S.A. Khan. 2012. Impact of sawdust using various woods for effective cultivation of Oyster mushroom. Pak. J. Botany 44(1): 399-402.

2. Naqvi, S.F., M.Inam-ul-Haq, M.I.Tahir and S.M.Mughal. 2012. Screening of sesame germplasm for resistance against the bacterial blight caused by *Xanthomonas campestris* pv. *sesami*. Pak. J. Agri. Sci. 49(2):131-134.

3. Iqbal, S., M. Ashfaq, H. Shah, M. Inam-ul-Haq and Aziz-ud-Din. 2012. Prevalence and distribution of Cucumber Mosaic Virus (CMV) in major chilli growing areas of Pakistan. Pakistan Journal of Botany 44(4):1749-1754.

4. M. Inam-ul-Haq, S. Mehmood, H. M. Rehman, Z. Ali and M.I. Tahir. 2012. Incidence of root rot diseases of soybean in Multan Pakistan and its management by the use of plant growth promoting rhizobacteria. Pak. J. Bot. 44(6):2077-2080.

5. Naqvi, S.F., M. Inam-ul-Haq, M. Ahsan Khan, M. Ibrahim Tahir, Zahid Ali and H.M. Rehman. 2013. Morphological and biochemical characterization of *Xanthomonas campestris* (Pammel) Dawson pv. *sesami* and it's management by bacterial antagonists. Pak. J. Agri. Sci., 50(2): 229-235

6. Rashid, A., M. Shahjahan, M. Inam-ul-Haq, M. Shahid, M. Ehetisham-ul-Haq, I. H. Waris, M. Farooq, E. Perveez and M. Ashraf. 2013. Distribution of black chaff disease of wheat caused by *Xanthomonas campestris* pv. *translucens* in different ecological zones of Pakistan and its management through plant extracts and bio-products. European Journal of Experimental Biology, 3(4): 261-266.

7. Tahir, M.I., M. Inam-ul-Haq, M. Ashfaq, N.A. Abbasi. 2014. Surveillance of *Ralstonia solanacearum* infecting potato crop in Punjab. Pak. J. Phytopathol., 26(1): 43-50.

Books

Papers published in refereed conference proceedings:

1. Khan, M.M., M.A. Khan, M. Inam-ul-Haq, R. Ahmad and I. Aziz. 1992. Incidence of citrus canker caused by *Xanthomonas campestris* pv. *citri* in kinnow orchards in Faisalabad. District. Proceedings of the First International Seminar on Citriculture in Pakistan, 2-5. December 1992, Page 311-314.

2. Ahmed, R., M. Z. Kayani, N. Javed and M. Inam-ul-Haq. 1992. Effect of different inoculum levels of citrus nematode *Tylenchulus semipenetrans cobb*. on the growth of seedlings. Proceeding of the First International Seminar on Citriculture in Pak., 2-5. December 1992, Page 319-320.

3. Ahmad. R., M.Z. Kayani, M. Inam-ul-Haq and N. Javed. 1992. Effect of seasonal fluctuation on the population dynamics of citrus nematode (*Tylenchulus semipenetrans cobb*.) Proceedings of the second international Workshop on plant Nematology. November 22-26 1992, Karachi University Pakistan.

4. M.Inam-ul-Haq, R. Ahmad and M.Y. Khan. 1999. Evaluation of various concentrations of *Pseudomonas fluorescens* for the biological control of chickpea wilt. Proceeding of 2nd National Conference of Plant Pathology, Sept. 27-29, Univ, Agri. Faisalabad. Pages. 293-295.

5. M.Inam-ul-Haq, and R. Ahmad. 1999. Evaluation of various methods of application of plant growth promoting rhizobacteria for the biological control of chickpea wilt. Proceeding of 2nd National Conference of Plant Pathology, Sept. 1999. Univ, Agri. Faisalabad. Pages. 296-300.

6. M. Inam-ul-Haq, M.I. Khawar, M.I. Tahir, S. KR. Yellareddygari and M.S. Reddy. 2011. Induction of systemic resistance by rhizobacteria for the management of root-knot nematodes in tomato. Proceedings of the 2nd Asian PGPR Conference. Plant Growth-Promoting Rhizobacteria (PGPR) For Sustainable Agriculture: August 21-24, 2011, Beijing, P.R. China. pp. 308-321.

7. Shahid, A.A., Yasin, S., Inam-ul-Haq, M., Ali, M. and Saleem Haider, M. 2013. "Use of Rhizobacteria for the Management of Soft Rot Disease of Potato" Athens: ATINER'S Conference Paper Series, No: AGR2013-0770.

8. M. Ibrahim Tahir, M. Inam-ul-Haq, Farooq Azam and M.S. Reddy. 2013. Utilization of *Pseudomonas fluorescens* and *Bacillus subtilis* for the root knot nematode management of chili and their effect on chili growth. In: Recent Advances in Biofertilizers and Biofungicides (PGPR) For Sustainable Agriculture. Proceedings of 3rd Asian Conference on Plant Growth-Promoting Rhizobacteria (PGPR) and other Microbials Manila, Philippines April 21-24, 2013. Chapter 30. pp. 366-377.

9. M. Inam-ul-Haq, M. Ibrahim Tahir, M.S. Reddy. 2013. Disease suppression of fungal root pathogens of chickpea using antagonistic rhizobacteria and neem cake. In: Recent Advances in Biofertilizers and Biofungicides (PGPR) For Sustainable Agriculture. Proceedings of 3rd Asian Conference on Plant Growth-Promoting Rhizobacteria (PGPR) and other Microbials Manila, Philippines April 21-24, 2013. Chapter 31. pp. 378-392.

ABSTRACTS (Papers Presented in Conferences)

RESEARCH/TECHNICAL REPORTS (unpublished)

POPULAR ARTICLES/BOOKLETS

1. Some recommendations to get rid from cotton leaf curl virus 1993. Zari Digest. 27(3): 15-16.

2. Mango diseases and their control 1996. Zari Digest 29/330 (4/1): 48-50.

3. Controlling chickpea diseases. Article published in the daily Newspaper, 'The Nation" on May 21, 2000.

4. N.A. Khan, M. Inam-ul-haq and M.A.Khan. 2008. Little Wonders. Nutritional Value of Oyster Mushroom and its cultivation on paddy straw. Nation, July, 20. p.36

5. M. Inam-ul-Haq, Shazia Shahzaman, Ch. Abdul Rauf. 2011. Chanay ki Kasht. A booklet.

Research Grants and Contracts.

Entries should include:

Date Title Agency / Organization
Total Award Amount

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.*"

4. Evaluation of different plant materials for their nematicidal potential against root-knot nematode *Meloidogyne* spp. on tomato and brinjal (1993-94). Funded by UGC, Islamabad.

5. Biological control of chickpea wilt by the use of Plant growth promoting rhizobacteria (PGPR). 1999. Funded by UGC, Islamabad.

Biological control of root knot nematode *Meloidogyne* spp. of vegetables, (1995-96) Funded by UGC, Islamabad.

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).

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

Selected Professional Presentations

Annexure -I

Resume of Faculty Members

Faculty Resume-3

Name	**Dr. Muhammad Ashfaq**
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.

Date From	Date To	Title	Institution
1-7-2004 May, 2009 to May, 2010	To-date	**Assisstant Professor**	Teaching and Research experience Visiting Scientist at SCRI/JHI, Dundee, UK, from May

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
iv) Reviewer of National and International Scientific Journals.

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:

Years Degree Name

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

Year	Degree	Name	Contributed as
2012	M.Sc.(Hons)	Anam Saleem	Supervisor
2013	M.Sc.(Hons)	M.Zeeshan	Supervisor
2013	M.Sc.(Hon)	Sehrish Saba	Supervisor
2014	M.Sc.(Hons)	Zargham Abbas	Supervisor

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	***Date,*** ***Title,*** ***Institution*** 2007 Lecturar PMAS AAUR 2014 Assissstant Professor PMAS AAUR
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

Irshad. G., F. Naz. M. I. Haque and A. Rauf. 2013. Population dynamics of aeromycoflora at three sites of Rawalpindi by evaluating two sampling methods. Pak. J. Phytopathology. 25 (01): 31-36.

Fahim.M.A.,F.Naz and **G.Irshad**. 2013. Important fungal diseases of potato and their management – a brief review. Mycopath 11(1)**:** 45-50.

Fahim. A, C. A. Rauf and **G. Irshad**. 2014. Nucleotide evidence of capsid protein (CP) gene of potato virus Y (PVY) from a Pakistani isolate. Nucleotide evidence of CP gene. Pakistan Journal of Agricultural Sciences. (Accepted).

Irshad. G, Z. Haider, Z. Ikram, A. Iqbal. S. Hadair and M. I. Haq. 2014. Chemical control of fungal diseases of stored *Solanum lycopersicum* fruit by potassium bicarbonate and calcium chloride. Pak. J. Phytopathology. 26(02).281-287.**)**

Sultana. K, M. U. Shabaz, M. I. Haque, and **G**. **Irshad.** 2014. *Trinacrium anchorum*,a new hypomyceteous fungus from Pakistan. Journal of Plant Taxonomy and Geography. 69(1): 75-77.

Sultana, K. M. U. Shahbaz, **G. Irshad** and M. A. Iqbal. 2014. Addition of hypomyceteous fungi to the hypomycetes of Pakistan. Comunicata Scientiac.

Sultana, K. N. Raiz. **G., Irshad** and A. N. khan. 2014. Research note: Contribution to Mushroom Flora of Rawalpindi-Islambad, Pakistan. Journal of Bio resources management. 1(1):27-31.

Aurangzeb,W.,**G. Irshad**, N. Mehammod and N. Beghum. 2014. A seed borne mycoflora associated with local and imported paddy seed lots in Pakistan. Journal of

Phtyopathology. 26(2). 241-246.

Scholarly and / or creative activity

1. "Review of the implementation of Biodiversity Action Plan of Pakistan – current status and future steps". A report for Ministry of Environment/ IUCN-P, Islamabad. 2005.

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

3. "Review of Protected Areas Management and Performance Effectiveness in Pakistan". A report for the Ministry of Environment/IUCN-P, Islamabad. 2007.

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	**Date, Title, Institution.** 1-4-2010 to date **Assistant Professor** **PMAS AAUR** 7-5-2007 - 31-3-2010 **Lecturer** **PMAS AAUR** 1-11-2003 - 31-10-2006 **Research Associate** **PSF/ PMAS UAAR Project No 69** **7-1-2000 - 31-10-2000 Lecturer (Biology) Rawalpindi**
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

Graduate Students / Undergraduate Students	***Supervision of Students*** **Years** **Degree** **Name** 2013 P.hD. Gulshan Irshad 2012 Msc (Hons) Sania Shoukat 2013. Msc (Hons) Sidra Hafeez 2014 Msc (Hons) Aliya Tariq 2014 Msc (Hons) Alveena Mumtaz
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:

C.A.Rauf **, Farah Naz**, I. Ahmad, I.U.Haque and A. Riaz. (2014). Management of black scurf of potato with effective microbes, biological potassium fertilizer(BPF), and *Trichoderma harzianum*. Int. J. Agric. Biol., 17: 601–606. **[IF=0.902]**

Tayyaba Sultana, Farah Naz, M. IrfanUl-Haque, Shahid Butt and M. Fahim Abbas (2014) Characterization and relative contribution of fungal and bacterial pathogens involved in Sudden Death Syndrome of chillies. Pak. J. Phytopathol., 26 (01):53-61.

Rubab Altaf, Ch.A.Rauf, Farah Naz, Ghulam Shabbir. (2014) Surveillance and characterization of Fusarium isolates associated withlentil wilt. Pak. J. Phytopathol., 26 (01):83-90. **(HEC Recognized Journal)**

Muhammad Fahim Abbas**, Farah Naz**, Gulshan Irshad. (2013). Important fungal diseases of potato and their management-a brief review. ***Mycopath*** 11 (1), 245 47

Ahmed, R., Riaz, A., Zakria, M. & **Naz, F**. (2013). Incidence of karnal bunt (*Tilletia indica* Mitra) of wheat (*Triticum aestivum* l.) in two districts of Punjab (Pakistan) and identification of resistance source. ***Pak. J. Phytopathol.***, 25(1), 01-06.

Gulshan Irshad **, Farah Naz**, Muhammad I. U. Haq, Chaudhary A. Rauf. (2013). Population dynamics of aeromycoflora at three sites of Rawalpindi by evaluating two sampling methods. Pak. J. Phytopathol., 25 (01) 31-36. **.**

Zia-Ul-Hussnain, S., C. A. Rauf, M. I. Haque, S. Afghan, T. Mukhtar , **F. Naz**, M. K. N. Shah and A. Shahzad. (2013) Comparison of DAC-ELISA and tissue blot immunoassay for the detection of *Acidovorax avenae* subsp. *avenae*, causal agent of red stripe of sugarcane. ***J Plant Pathol Microb*** 2013, 4:4 http://dx.doi.org/10.4172/2157 7471.1000172

Abid Riaz, J. Nicklin, I. Haque, C.A.Rauf, G.Qadir and **Farah Naz. (**2013). Toxicity induced by solanapyrone in chickpea shoots and its metabolism through glutathione/ glutathione-s- transferase system. ***Pak.J. Bot*.,** 45(1): 135-139.

Khola Rafique, Awais Rasheed, Alvina Gul Kazi, Hadi Bux, **Farah Naz.** Tariq Mahmood and Abdul Mujeeb-Kazi. 2012. Powdery mildew resistance in some new wheat amphiploids (2n = 6x = 42) derived from A- and S-genome diploid progenitors. **Plant Genetic Resources**, 10(1):1-16. **[IF=0.27]**

Research Grants and Contracts.	**a) *Completed Projects*** 1 **Inhibition of *Rhizoctonia solani* with Isothiocyanates produced by Brassicaceae Species** ” sponsored by PMAS UAAR, (2009 -2010) **(**Completed**)** 2 "**Management of black scurf of potato**" sponsored **By:** Pakistan Science Foundation (PSF) (01/12/2003 - 11/30/2006) **(**Completed**)**

	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
members	• 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-

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 3rd International Conference of Pakistan Phytopathological Society. Department of Agriculture and Agribusiness Management, University of Karachi, Pakistan January 23-25, 2014**
- 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

- Poster Presentation in **Third National Conference of Plant Pathology** on "Histopathology of sunflower seedlings infected with *Macrophomina phaseolina*", NARC, Islamabad, Pakistan, October 1-3, 2001.
- 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.

1.

Annexure -I

Resume of Faculty Members

Faculty Resume-6

Name	Muhammad Usman Raja
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.

Date From	Date To	Title	Institution
06-11-2006	To-date	Assistant Professor	Department of Plant Pathology, PMAS-Arid Agriculture University Rawalpindi, Pakistan
24-11-2001	06-11-2006	Lecturer	. Department of Plant Pathology, PMAS-Arid Agriculture University Rawalpindi, Pakistan

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

<table>
<tr><td>Graduate Students
Postdocs
Undergraduate Students

Honour Students</td><td>List supervision of graduate students, postdocs and undergraduate honors theses showing:
Years Degree Name
Show other information as appropriate and list membership on graduate degree committees.
<table><tr><th>Years</th><th>Degree</th><th>Name</th></tr><tr><td>2014</td><td>M.Sc.(Hon)</td><td>Komal Zafar</td></tr></table></td></tr>
<tr><td>Service Activity</td><td>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 diagonostic and advisory services to farmers of peripheral area</td></tr>
<tr><td>Brief Statement of Research Interest</td><td>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</td></tr>
</table>

Publications

Publications with Impact factor

Publications in peer reviewed journals:

Abstract

1. Raja, M.U. and Ali M.W. Screening of commericial 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
2. Gul-e-lalah, Raja, M. U.,Gardezi, S R,A., Irshad,G., Akram,A.2015. A morel story of Poonch district AJK. 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**

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:

1. Agrios, G.N. 2005. Plant Pathology, 4th edition, Academic Press, New York, USA.

Reference:

1. Singh, R.S. 1982. Plant Pathogens: The Fungi. Oxford and IBH Publishing Company, New Delhi, India
2. Singh, R.S. 1989. Plant Pathogens: The Prokaryotes. Oxford and IBH Publ. Company, New Delhi, India
3. Alexopoulos, C. J., C.W. Mims and M. Blackwell. 1996. Introductory Mycology. 4th edition, John Wiley and Sons, Inc., New York, USA
4. Lucas,J.A. 1999. Plant Pathology and Plant pathogens. Blackwell Scientific Publications, Oxford, U.K.
5. Johnson, R. 1999. Plant Pathology. Blackwell Scientific Publications, Oxford, U.K.

PP-402 INTRODUCTION TO PLANT PATHOLOGY 3(2-2)

Theory:

Definition of disease in plants; Nature and causes of plant diseases. Effects of disease on host plant; Nature of losses and economic importance of plant diseases.Symptoms, etiology, methods of perpetuation, disease cycle and

management of representative parasitic diseases of field and horticultural crops. Principles of plant disease management.

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:

1. Agrios, G.N. 2005. Plant Pathology, 4th edition, Academic Press, New York, USA.

Reference:

1. Mehrotra, R.S. 1980. Plant Pathology. Tata McGraw Hill Publishing Company, New Delhi, India.
2. Hafiz, A. 1986. Plant Diseases. Pakistan Agricultural Research Council, Islamabad, Pakistan.
3. Johnson, R. 1999. Plant Pathology. Blackwell Scientific Publications, Oxford, U.K.
4. Lucas,J.A. 1999. Plant Pathology and Plant pathogens. Blackwell Scientific Publications, Oxford, U.K.

PP-501 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:

1. Alexopoulos, C.J., C.W. Mims and M. Blackwell. 1996. Introductory Mycology. 4th edition, John Wiley and Sons, Inc. New York, USA.

Reference:

1. Barnett, H. 1976. Fundamentals of Mycology. 2nd edition, Edward Arnold, London, UK.
2. Sharma, P.D. 1987. The Fungi, Rastogi and Company., Meerut, India.
3. Talde, U.K. 1994. Advances in Mycology and Aeriobiology Vol-20. TTPP Publishers, New Delhi, India.

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

1. Perry, R.N. and Moens, M. 2006, Plant Nematology.
2. Dasgupta, M.K. 1998, Phytonematology. TTPP Publishers, India.
3. Jairajpuri, M.S.,2002. Nematodes Structures
4. Dropkin, V.H. 1989. Introduction to Plant Nematology. John Wiley and Sons, Inc., New York, USA

Reference:

1. Mai, M.F. and H.H. Lyon. 1975. Pictorial Key to Genera of Plant Parasitic Nematodes, 4th edition. Comstock Publishing Association, Cornell University Press, Ithaca, USA.
2. Whitehead, a.D. 1998. Plant Nematode control. CAB International, Ferry Lane, Kew, Surrey, England.
3. Trivedi, P.C. 1998. Plant Nematode management: A Biological Approach. CAB International, Ferry Lane, Kew, Surrey, England.

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:

1. Singh, R.S. 1989. Plant Pathogens: The Prokaryotes. Oxford and IBH Publishing Company, New Delhi, India.

Reference

1. Agrios, G.N.1996. Plant Pathology. 4th edition. Academic Press, New York, USA.
2. Bradbury, J.F. 1986. Guide to Plant Pathogenic Bacteria, CAB Intnational Mycological Instt., Kew, Surrey, UK.
3. Lelliott, R.A. and Stead, D.E. 1987. Methods for the diagnosis of bacterial diseases of plants. BSPP, Blackwell Scientific Publications, London, UK.

4. Schaad, M.W. 1988. Guide for Identification of Plant Pathogenic Bacteria, 2nd edition. American Phytopathological Society. Saint Paul, Minnesota, USA.
5. Johnson, R. 1999. Plant Pathology. Blackwell Scientific Publications, Oxford, U.K.

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:

1. Mathews. R. E. F. 1992. Fundamentals of Plant Virology. Academic Press, New York, USA.

Reference

1. Boss, L. 1983. Introduction to Plant Virology. Longman, London, UK.
2. Walky, D.G.A., 1985. Applied Plant Virology. Longman, London, UK
3. Bashir, M. and S. Hassan. 1998. Diagnostic Methods for Plant Viruses. Pakistan Agricultural Research Council, Islamabad, Pakistan.

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 mmanagement.

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

1. Bahl, N. 1988. Handbook on Mushroom. 2nd edition. Oxford and IBH Publishing Company New Delhi, India.
2. Gopi, K., D. David and K. Douds.- Current Advances in Mycorrhizae Research. American Phytopathological Society, St. Paul, Minnesota, USA.

Reference:

1. Atkins, P.C. 1972. Mushroom Growing Today. Faher and Faher Ltd. London, UK.
2. Aneja, K.R.1996. Experiments in Microbiology, Plant Pathology ,Tissue Culture and Mushroom. Wiley Publishing Company, U.K.

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

Theory:

Introduction to molecular biology; Molecular biology and plant pathology; Macro mollecules in Plant pathology, Proteins, Carbohydrates, Lipids, Terpenoides, 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:

1. Devi, P. 2005. Principles and Methods of Plant Molecular Biology, Biochemistry, Biotechnology and Genetics. Student Edition, India.
2. Pena, L. 2005. Transgenic Plants. Methods and Protocol. HUMANA, JN, USA.
3. Mathew, J. D., 2003. Molecular plant pathology. Bios Scientific Publishers, LTD., UK.
4. De Roberties, E.D.P. and DeRoberties, E.M.T. Jr. 1992. Cell and MSolecularBiology. 8th ed. John Willey & Sons, USA.

Reference:

1. Hafeez, F,Y, Zafar, Y and Khalid, A. M. 2005. Modern techniques in Biotechnology. A theoretical Manual, NIBGE, Faisalabad.
2. Albert, B., Bray. D and Lewis Raff, M. Robert K. and Watson J.D. 994. Molecular biology of cells 3rd ed. Garland Publications, N.York
3. Gardner, Simmons, Snusted 1991, Principles of genetics, 5th Edition, John Wiley & Sons Inc., Canada.

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:

1. Nyal. R.F. 1989. Field Crops Disease Handbook. AVI Publishing Company Inc. Westport, Connecticut, USA.

Reference:

1. Hafiz A. 1986. Plant Diseases. Pakistan Agricultural Research Council, Islamabad, Pakistan.
2. Kenaga, C.B., E.B. Williams, and R.J. Green. 1971. Plant Disease Syllabus. Balt Publishers, West Lafayette, Indiana, USA.
3. Singh, R.S. 1988. Plant Diseases. 6th edition, Oxford and IHB Publishing Company (Pvt.) Ltd. New Delhi, India.
4. Compendia of wheat, rice, maize, cotton, sorghum, pea, peanut diseases. American Phytopathogical Society, St. Paul, Minnesota, USA.
5. Rao, G.P. 1994. Current Trends in Sugarcane Pathology. TTPP Publishers, New Dheldi, India.
6. Thind, T.S. 1998. Diseases of Field Crops and their Management. VBS Publishers, India.
7. Gangopadhay, S. 1992. Current Concepts on Fungal Diseases of Rice. 1998. TTPP Publishers, New Dhelhi, India.

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 Vegetables Blights, wilts, scabs, black scurf, orobanche, collar 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:

1. Pathak, V.N. 1981. Diseases of Fruit Crops. Oxford and IBH Publishing Company, New Delhi, India.
2. Sherf, A.F., and A.A. Macnab. 1986. Vegetable Diseases and Their Control. John Wiley and Sons, Inc., New York, USA.

Reference

1. Dixon, D.R. 1981. Vegetable Crop Diseases. McMillan Press, London, UK.

2. Compendia of cucurbits, onion and garlic, potato, tomato and pea diseases. American Phytopathological Society, St. Paul, Minnesota, USA.
3. Horst, R.K. 1997. Compendium of Chrysenthemum Diseases. APS Press, Saint Paul, MN, USA.

PP-508 LINICAL PLANT PATHOLOGY 3(1-4)

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:

1. Fox, R.T.V. 1994. Principles of Diagnostic Techniques in Plant Pathology. CAB International, UK.

Reference:

1. Gangopadhyay, S. 1984. Clinical Plant Pathology. Kalyani Publishing Company, New Delhi, India.
2. Ahmad, I., M. Aslam and A. Munir. 1992. Phytopathological Diagnostic Techniques,. Pakistan Agricultural Research Council, Islamabad, Pakistan.
3. Schots, A., F.M. Dewey and F. Oliver. 1994. Modern Detection Assays for Plant Pathogenic Fungi. CAB International, UK.
4. Waller, J.M. 1998. Plant Clinic Handbook. CAB International, Ferry Lane, Kew, Surrey, England.

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 green house against major plant pathogens disease assessment parameters.

Books Recommended:

Text:

1. Agrios, G. N, 2005. Plant Pathology, 5th edition, Academic Press, New York, USA.
2. Sadasivan, S and Thayumanavan, B. 2003. Molecular Host Plant Resistance to Pest. Marcel Dekker, USA.
3. Singh, D. P., 2002. Breeding for Resistance to Biotic Stress, International Books Distribution Co. India.
3. Staples, C. R., and G. H. Toenniessen. 1981. Plant Disease Control
4. Resistances and Susceptibility. John Wiley and Sons, Inc. New York, USA.

Reference:

1. Moore, D. and Frazer, L. A. N., 2002. Essential Fungal Genetics. Springer Verlag, New York, USA.
2. Boland, G. J., David, L., and Kuykendall 1998. Plant Microbe Interactions and Biological Control. Marcel Dekker, Inc, USA.
3. Stubbs, R.W., J. M. Prescot, E. E. Sarri and H. J. Dubin. 1986. Cereal Disease Methodology Manual. CIMMYT, Mexico.
5. Russel, G. C. 1981. Plant Breeding for Pest and Disease Resistance. butterworths and Company, Ltd., London, UK.

PP-601 PRINCIPLES AND METHODS OF PLANT 3(2-2)

DISEASE MANAGEMENT

Theory:

Understanding principles of avoidance, exclusion, eradication, protection, and immunization. Management of plant diseases by regulatory (quarantine and inspection), cultural (host eradiction, 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:

1. Fry, W. E. 1982. Principles of Plant Disease Management. Academic Press, New York, USA.

Reference:

1. Chattopadhyay, S.B. 1989. Principles and Procedures of Plant Protection, 2nd edition, Oxford and IBH PublishingCompany, New Delhi, India.
2. Lucas, C.B., C.L. Campbell and L.T. Lucas. 1985. Introduction to Plant Diseases: Identification and Management. The AVI Publishing Company Inc., USA.
3. Stakman, E. C., and J. G. Harrar. 1957. Principles of Plant Pathology. The Ronald Press Co., New York, USA.
4. Trivedi, P.C. 2000. Plant Diseases. CAB International, Ferry Lane, Kew, Surrey, England.

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:

1. Agrios, G.N. 2005. Plant Pathology, 4th edition, Academic Press, New York, USA.

Reference:

1 Smith, W.H. 1970. Tree Pathology. Academic Press, London.

2 Blanchard, R.O. and T.A. Tattar. 1981. Field and laboratory Guide to Tree Pathology. Academic Press, London.

3. Boyee, J.S. 1961. Forest Pathology. McGraw Hill Book Company, New York.

4. Chase, A.R. 1997. Foliage Plant Diseases: Diagnosis and control. APS Press, Saint Paul , MN, USA.

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:

1. Bhutta, A.R., Hussain, A. and Rahman, M.R., 2004. Hand book on Seed Processing and Storage. Published by Federal Seed Certification and Registration Department, Islamabad, Pakistan.
2. Agarwal, V.K. and Sinclair, J.B. 1993. Principles of Seed Pathology. Vol. 1 & 11. CBS Publs. New Delhi.
3. Neergaard, P., 1979. Seed Pathology. Rev. ed. Mc Millan Press London.

Reference:

1. Chakraverty, A, Mujumdar, A.S.Raghavan, G.S.V and Ramaswamy, H.S, 2003. Hand book of Post harvest Technology, Publ. By Marcel Dekher. INC, New York, USA.
2. Bhutta, A.R. and Ahmad, I, 2001. Seed Pathological Techniques and their Application. Published by National Book Foundation, Islamabad, Pakistan
3. Dasgupta, M.K. and Mandal, N.C., 1986. Postharvest Pathology of perishables. Oxford & IBH Publs. Co., New Delhi.
4. Dennis, C.1983. Postharvest Pathology of Fruits and Vegetables. Academic Press. New York, USA.

PP-609 PROJECT PLANNING & SCIENTIFIC WRITING 2(1-2)

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.