



National Agriculture Education Accreditation Council

Report of the
Accreditation Inspection Committee
(AIC)
on
Department of Plant Pathology
Faculty of Agricultural Sciences & Technology,
Bahauddin Zakariya University,
Multan

March 2013

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Acknowledgments

The Accreditation Inspection Committee (AIC) gratefully acknowledges the excellent support provided by the management, faculty, staff and students of the Department of Plant Pathology, Faculty of Agricultural Sciences & Technology, *Bahauddin Zakariya* University (BZU), Multan. The AIC also acknowledges with thanks to Chairman, NAEAC and his team especially Mr. Naseer Alam Khan, Secretary, National Agriculture Education Accreditation Council (NAEAC), for the excellent arrangements made for conducting the visit to the University and their valuable contributions during the preparation of the report.

**Accreditation Inspection Committee of NAEAC for
External Evaluations and Accreditation of Degree Programs
of Department of Plant Pathology, BZU., Multan**

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Executive Summary

Main Findings

- The University College of Agriculture (UCA), BZU, Multan, was established in 1994. The Department of Plant Pathology started its B.Sc. (Hons) Agriculture specialization in Plant Pathology program in 1994. The Department initiated its M. Sc. (Hons.) agriculture specialization in Plant Pathology and Ph.D. Programs in Plant Pathology in 2006 and 2009, respectively.
- The Department of Plant Pathology, Faculty of Agricultural Sciences & Technology, BZU, Multan has reasonable infrastructure consisting of class rooms, teaching and research laboratories and experimental field, focused on teaching and research activities of four essential areas of Plant Pathology viz. Fungal Plant Pathology, Plant Virology, Plant Nematology and Phyto-bacteriology.
- The Department has two teaching and four research laboratories, a shared facility of computer laboratory, and reasonable library resources of relevant books also shared with the main library of the college/University.
- The Department lack of funds for laboratory equipment, chemicals, and supplies, operational and day-to-day expenditure.
- The Department does not have single Professor or Associate Professor in Plant Pathology.
- The Department needs basic and essential equipment used in Plant Pathology, inadequate laboratory supply such as chemicals, reagents and diagnostics to fulfill the requirement of quality teaching and research activities for the degree programs.

Recommendations

- The Department is short of qualified faculty, there is urgent need to appoint at least one Professor and two Associate Professors in the Department.
- The Department needs to appoint technically qualified supporting staff. Each laboratory may have at least one trained Laboratory Assistant and one Laboratory Attendant.
- The Department needs financial resources for laboratory equipments, supplies, chemicals, reagents. Therefore, it is recommended that sufficient financial resources need to be allocated to cater the department requirement for the degree programs
- Financial assistance could improve the quality of internship programs at B. Sc (Hons) degree program, thesis research at M. Sc (Hons); therefore, it is recommended that budget could be allocated to the Department for internships and conduct of postgraduate research.
- The department library could be enriched with induction of books, local and international journals, literature and computers on continuous basis by allocation of additional funds for the Departmental/Faculty library.
- Participation of faculty members in conferences, seminars and workshops may be encouraged to improve exposure and interaction with peer groups worldwide.

Conclusion

- The AIC concluded that on the basis of the inspection / evaluation, the team unanimously recommends Accreditation of the Degree Programs of [(B. Sc (Hons) and M. Sc (Hons) Agriculture specialization in Plant Pathology] of the Department of Plant Pathology, Faculty of Agricultural Sciences and Technology, BZU, Multan, in the “Y2” category of National Agriculture Education Accreditation Council/Higher Education Commission with scope for the up-gradation to category “X or W after appropriate improvements in due course of time.

1. Introduction

1.1 Brief history and Background of Degree Program

The University College of Agriculture (UCA), BZU, Multan, was established in 1994. The Department of Plant Pathology started its B.Sc. (Hons) Agriculture specialization in Plant Pathology program in 1994. The Department initiated its M.Sc. (Hons.) agriculture specialization in Plant Pathology and Ph.D. Programs in Plant Pathology in 2006 and 2009, respectively.

The Department of Plant Pathology, Faculty of Agricultural Sciences & Technology, BZU, Multan has reasonable infrastructure consisting of class rooms, teaching and research laboratories and experimental field, focused on teaching and research activities of four essential areas of Plant Pathology viz. Fungal Plant Pathology, Plant Virology, Plant Nematology and Phyto-bacteriology. The Department has two teaching and four research laboratories, a shared facility of computer laboratory, and reasonable library resources of relevant books also shared with the main library of the college/University.

1.2 Program Mission and Objectives

Mission statement

Following is the mission statement of the Department of Plant Pathology:

“Training of professionals who can be able to deal with plant health and suggest recommendations for its maintenance or restoration”.

Program objectives

- To provide basic, applied and advance knowledge about plant diseases and their management to the students.
- To enhance their abilities to deal with the known and unknown problems related to plant diseases in the field.
- To develop research behavior and capabilities in undergraduate and postgraduate students.
- To strengthen the farmers’ economy by providing them better management strategies.

1.3 Academic Programs

The Department is presently offering three degree programs as per following details:

- 1.B. Sc. (Hons.) Agriculture specializing in Plant Pathology
- 2.M. Sc. (Hons.) Agriculture specializing in Plant Pathology
- 3.Ph. D. in Plant Pathology

1.4 Present Enrollment and graduate produced

The details of the student enrollment in the department and graduates produced so far, is given in Annex-X

2. Criterion-wise Program Evaluation and Analysis

2.1 Criteria-I: Strength and quality of faculty

The AIC met individually or in groups with all faculty members in the Department during its visit to the Department and discussed various issues such as academic and professional background, areas of their research and teaching and research experience. The AIC recorded their views and professional input on strengths, weaknesses, opportunities and threats to the degree programs of the Department. Presently there are four permanent, one contractual and two part-time faculty members in the Department. Among four permanent faculty members, there is no full time Professor or Associate Professor, all four are Assistant Professors. Out of four faculty members, three have Ph. D degrees

and one have M. Sc (Hons) degree. In connection with four essential areas in Plant Pathology, the faculty members of the Department have reasonable trained faculty members in Fungal Plant Pathology, Plant Virology and Phyto-nematology. However, the Department is deficient in trained faculty members in areas of Phyto-bacteriology. A summary of the faculty strength, qualification, status, and teaching experience is given in Annex-II. The faculty strength is below then the HEC approved criterion of minimum six faculty members for a Department. The required faculty composition ratio is 1:1:2:2 while at Department of Plant Pathology 0:0:4:0 (Annex-III). Two faculty members are over 15 years of teaching and research experience, and others two have 10 and 5 years of teaching and research experience, respectively. The work load shown for Assistant Professors was 12 credit hours each, respectively which is at par with HEC standard/ guidelines.

Most of the faculty members are satisfied with their job and working environment, however, some are only partially satisfied, both internal working atmosphere in the department as well as in the university besides the financial benefits and freedom of professional activity. Most of the faculty members were satisfied with their salaries. Some of faculty members were not satisfied with policies relevant to professional growth and opportunities for next grade promotion.

2.2 Criteria-II: Curriculum design and development

The Department has acquaintance with HEC approved curriculum for the degree programs [B. Sc (Hons) Agriculture (Plant Pathology) and M. Sc (Hons) Agriculture (Plant Pathology)]. The HEC requirement for the B. Sc (Hons) Agriculture specialization in Plant Pathology is eight semesters degree program with 130-140 credit hours, including four credit hours internship/project in the eighth semester (Annex-IV). As per HEC policy, M. Sc (Hons) in Agriculture specialization in Plant Pathology degree program requires four semesters with minimum of 36 credit hours including 10 credit hours for thesis research and 24 credit hours course work of major and minor courses (Annex-V).

The committee had gone through the course contents and found that objectives of all the courses for B. Sc (H), M. Sc (H) and Ph. D were well defined and according to the HEC guidelines. While interviewing the faculty, it was noted that all the faculty members are maintaining and regularly updating respective course files. The AIC was satisfied with lecture wise course details, time of mid-term examination, assignments, quizzes and final-term examination conducted by the faculty members. Evaluation system of each course is in place and functional.

2.3 Criteria-III: Infrastructure and learning resources

2.3.1 Research and Teaching Laboratories: The Department of Plant Pathology at Faculty of Agricultural Sciences & Technology, BZU, Multan has six laboratories for teaching and research activities of the degree programs The AIC visited the departmental infrastructure and found adequate for teaching and research activities relevant to the degree programs under accreditation [(B. Sc Hons) and M. Sc (Hons) in Agriculture (Plant Pathology)]. The Department has two teaching undergraduate laboratories, four research laboratories including one for mushroom spawn production. The AIC was satisfied with number of laboratories to cater the teaching and research activities of four major areas of the Plant Pathology (Fungal Plant Pathology, Virology, Nematology and Phyto-bacteriology) for the existing student strength.

2.3.2 Laboratory Equipment: The laboratories were equipped with limited number of equipment (Annex-VII). AIC recorded that the supply of laboratory chemicals, reagents and diagnostics are not adequate and sufficient to fulfill the requirement of quality teaching and research activities at degree programs under accreditation. The laboratory manuals were available in all subjects. Students' views about practical learning were not encouraging and reported that most of the practical were limited to laboratory demonstration. The AIC noticed that there was inadequate number of support staff

available in the Department and technical competency of the staff was not relevant. The availability and qualification of laboratory staff is given in Annex-VIII. In service training of support staff was not in place.

2.3.3 Safety arrangements: There is no proper safety arrangement and no security plan is in place in case of emergency. No fire extinguishers have been installed in any laboratory. First aid kits/facilities were available in the laboratories/department.

2.3.4 Greenhouses and experimental field facility: A limited facility of screen house and glass house was available in the Department. Seventy five hectare of land is available as joint experimental field supplemented with farm equipment (Annex-IX) which is sufficient to conduct field experiment for the degree programs.

2.3.5 Departmental and main library

Departmental Library: The Department has a shared departmental library in Faculty of Agricultural Sciences and Technology has its own library with almost 500 relevant books including seating capacity of about 80 students. There is insufficient budget (Rs. 0.20 million/year) for the purchase of books, journals, etc at faculty level. However, the library is linked with HEC library digital database. The existing library facility is not sufficient to fulfill the requirement of the student until it is linked with main library of the university.

2.3.6 Computer Laboratory: The Department has shared computer laboratory in Faculty of Agricultural Sciences and Technology has a computer laboratory with 50 computers for students with basic facilities access to internet. The computer ratio for student is about 1:21 (computer: student) and faculty is 1:1.

2.3.7 Classrooms and teaching aids: There are two classrooms for under and post graduate students each with 1000 sq. ft of size. Limited teaching aids such as multimedia, overhead projectors, etc were available in laboratory and class rooms of the Department. However, it was indicated the portable multimedia facility is provided to the faculty members for class teaching.

2.3.8 Faculty Offices: Five faculty offices were available. Each faculty member was provided with a computer purchased by themselves or in project grants.

2.4 Criteria-IV: Students support and progression

The number of students enrolled in various semesters of under- and postgraduate programs show reasonable response (Annex-X). HEC guidelines are being followed for admissions both at B. Sc (Hons) and M. Sc (Hons) degree programs. The students support such as hostel, sport, medical, and transport facilities were available. However, limited financial support was available to the students. Student interaction with teachers was excellent and their attitude toward studies was found encouraging. Students from B. Sc (Hons) are sent to various research institutes for internship throughout the province where they acquire practical training and submit a formal report.

2.5 Criteria-V: Research and consultancy activities

The Department is established; therefore, research and consultancy activities at the Department were not adequate but encouraging as reflected by the research projects completed, ongoing and submitted for funding (Annex-XI). The department has developed a reasonable research culture and the staff is motivated to contribute to research journals (Annex-II).

2.6 Criteria-VI: Governance and leadership

The Department of Plant Pathology is constituent of Faculty of Agricultural Sciences and Technology, BZU, Multan. The MZU is an autonomous body having its own charter of functions. The apex governance authority is the Vice Chancellor assisted by the Registrar, Treasurer, and

Controller of Examinations and Deans of the faculties. The Vice Chancellor performs his functions through bodies including the Syndicate, the Senate, Academic Council, Advance Studies & Research Board, Finance and Planning Committee, and Directorates of Student Affairs, Quality Enhancement Cell. All these bodies function within the frame work of rules & regulations and guidance defined by HEC. Funds are provided by HEC for regular activities and specific research & special programs. There is a good working relationship between faculty members and the management. The budget allocation for operational expenses and research was low as compared to the requirements and expectations.

2.7 Criteria-VII: Adoption of best practices

The AIC confirmed that mechanism for ensuring quality exists. However, improvement is needed in various areas of conduct. Some innovative practices adopted by Department and short fall are highlighted as under:

- Teacher and student assessment system has been implemented which has created sense of responsibility and all time attentiveness.
- Assessment of individual courses based on feed back from students also deserves appreciation.
- Evaluation of students is based on mid term examination, assignments and final examination which requires a student to be attentive and responsive through out the semester and improve his abilities. The students were allowed to check their answer books and resolve anomalies if any for their satisfaction.
- Introduction of comprehensive exam/ paper covering major subjects is an important tool for revision of important topics before award of degree.

3. Overall analysis of the degree programs based on strength, weakness, opportunities and threats (SWOT)

3.1 Major strengths

- Sufficient essential infrastructure including class rooms, laboratories, study resources, and faculty offices and experimental field
- The faculty members are young and qualified
- Conducive working environment

3.2 Major weaknesses

- Lack of funds for laboratory equipment, chemicals, supplies, operational and day-to-day expenditure
- The Department does not have single Professor or Associate Professor in Plant Pathology
- Lack of qualified faculty members particularly in areas of Phyto-bacteriology.
- Lack of basic and essential equipment used in Plant Pathology, inadequate laboratory supply such as chemicals, reagents and diagnostics to fulfill the requirement of quality teaching and research activities for the degree programs.
- Lack of teaching equipment for class room teaching
- Lack of scholarships and flexible bank loans for the students

3.3. Major opportunities

- Due to the location of the Department, the faculty may have better opportunities to hunt funds for their research and development programs especially for cotton, mango and citrus pathology. Due to the significance of the cotton, mango and citrus, international donors could be attracted for funding to solve cotton leaf curl syndrome, mango malformation, die back and citrus tristeza, root rot problems of citrus and production pathogen-free propagative materials.
- The Department is newly established, therefore, chances of additional funds are available.
- Strong linkages could be developed with various research and developmental organizations and corporate sector. The Department has better opportunity to develop academia-industry linkages for the socio-economic development of the country.

3.4. Potential threats

- Lack of financial resources
- Power failure and no alternative arrangement
- Lack of trained laboratory staff
- Inadequate laboratory supplies

4. Actionable Recommendations

4.1. General recommendations

After careful SWOT analysis of the degree programs offered at Department of Plant Pathology, Faculty of Agricultural Sciences and Technology, BZU, Multan, the AIC suggested following recommendations:


- The Department is short of qualified faculty, there is urgent need to appoint at least one Professor and two Associate Professors in the Department. It is further needed to appoint one Assistant Professor in area of Phyto-bacteriology with relevant educational background to cater the requirement of the major areas of Plant Pathology.
- The Department needs to appoint technically qualified supporting staff. Each laboratory may have at least one trained Laboratory Assistant and one Laboratory Attendant.
- The Department is newly established and in most of the cases under transition, therefore, needs financial resources for laboratory equipments, supplies, chemicals, reagents. Therefore, it is recommended that sufficient financial resources need to be allocated to cater the department requirement for the degree programs
- Financial assistance could improve the quality of internship programs at B. Sc (Hons) degree program, thesis research at M. Sc (Hons); therefore, it is recommended that budget could be allocated to the Department for internships and conduct of postgraduate research.
- The department library could be enriched with induction of books, local and international journals, literature and computers on continuous basis by allocation of additional funds for the Departmental/Faculty library.
- Safety arrangements and security plans are not in place. Emergency exits may be arranged. The laboratories may also be equipped with first aid kits/facilities.
- To broaden the view of the students and teachers, more linkages could be developed with institutions of higher learning both at national and international levels.
- Participation of faculty members in conferences, seminars and workshops may be encouraged to improve exposure and interaction with peer groups worldwide.

4.2 Final Recommendation

- The academic programs [(B. Sc (Hons) and M. Sc. (Hons) Agriculture specialization in Plant Pathology] of the Department of Plant Pathology, Faculty of Agricultural Sciences and Technology, BZU, Multan, may be strengthened to cater the need of present enrolment of graduate and postgraduate levels of the above mentioned plant pathological degrees. The Department needs to address major weaknesses discussed in this report.
- On the basis of the inspection / evaluation, the team unanimously recommends Accreditation of the Degree Programs of [(B. Sc (Hons) and M. Sc (Hons) Agriculture specialization in Plant Pathology] of the Department of Plant Pathology, Faculty of Agricultural Sciences and Technology, BZU, Multan, in the “Y2” category of National Agriculture Education Accreditation Council/Higher Education Commission with scope for the up-gradation to category “X or W after appropriate improvements in due course of time.

4.3 Comments and signature of the Director:

I agree with the observations and recommendations made by the Accreditation Inspection Committee (AIC) in this report which is based on the discussions and visit to different facilities of this Department.



The Chairman/HoD,
Department of Plant Pathology,
Faculty of Agricultural Sciences and Technology,
BZU, Multan.

Dated: March 12, 2013

4.4 Name, Designation and signatures of the AIC Members

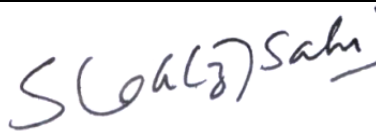
Prof. Dr Muhammad Arif
Department of Plant Pathology,
The University of Agriculture,
Peshawar

Convener



Prof. Dr. Shahbaz Talib Sahi
Chairman,
Department of Plant Pathology,
University of Agriculture,
Faisalabad

Member



Mr. Naseer Alam Khan
Secretary, NAEAC

Member

Dated: March 12, 2013

ANNEXURE-I
Itinerary of AIC On-Site Accreditation Visit

Host Institution:	Faculty of Agricultural Sciences and Technology, BZU, Multan									
Institute/Program:	Department of Plant Pathology									
Review Team:	<table border="0" style="width: 100%;"> <tr> <td style="width: 5%;">1.</td> <td style="width: 75%;">Prof. Dr Muhammad Arif Department of Plant Pathology, The University of Agriculture, Peshawar</td> <td style="width: 20%; text-align: right;">Convener</td> </tr> <tr> <td>2.</td> <td>Prof. Dr. Shahbaz Talib Sahi Chairman, Department of Plant Pathology, University of Agriculture, Faisalabad</td> <td style="text-align: right;">Member</td> </tr> <tr> <td>3</td> <td>Mr. Naseer Alam Khan, Secretary NAEAC</td> <td style="text-align: right;">Member</td> </tr> </table>	1.	Prof. Dr Muhammad Arif Department of Plant Pathology, The University of Agriculture, Peshawar	Convener	2.	Prof. Dr. Shahbaz Talib Sahi Chairman, Department of Plant Pathology, University of Agriculture, Faisalabad	Member	3	Mr. Naseer Alam Khan, Secretary NAEAC	Member
1.	Prof. Dr Muhammad Arif Department of Plant Pathology, The University of Agriculture, Peshawar	Convener								
2.	Prof. Dr. Shahbaz Talib Sahi Chairman, Department of Plant Pathology, University of Agriculture, Faisalabad	Member								
3	Mr. Naseer Alam Khan, Secretary NAEAC	Member								

Schedule of Visit: February 25-26, 2013

Day 01	Time	Activity
	08:30-10:30	Presentation: Department of Plant Pathology <ul style="list-style-type: none"> • History of Department /Academic Programs • Mission Statement • Program Goals and Objectives • Annual intake, pass percentage, average CGPA • Curricula Summary, Revision/Update, Stakeholders feedback • Admission and withdrawal policy, meetings of BOS and BOF • Faculty Summary, Qualification/ Experience, Support Staff, Teaching load • Instructional approach, grading system • Maintenance of course files, course review reports • Infrastructure Summary, Labs, Greenhouse, Library, class rooms and faculty offices etc. • Operational budget • Employers Feedback, Alumni Survey • Question/Answer Session • Strengths and weaknesses of degree programs, Mechanism of ensuring merit, transparency and unbiased-ness
	10:30-12:00	Curriculum Review: Department of Plant Pathology Coordinator <ul style="list-style-type: none"> • Record of Course files maintenance • Intended students learning outcomes • Curricula is current - evidence • To what extent Curricula is globally compatible and current? • Curricula is periodically reviewed by BOS & BOF and record of meetings • Stakeholder's feedback for revision of curricula is ensured? • Course review reports • Attendance requirements • Maintenance of Examination Record • Session/Semester Record • Evaluation Instruments uses by the faculty • Research Projects by faculty/students
	12:00 – 13:00	Infrastructure Visit: Dr. Atiq-ur-Rehman, Departmental Coordinator <ul style="list-style-type: none"> • Research & Teaching Labs • Greenhouses & Experimental farms
	13:00-14:30	Zohar Prayers & Lunch
	14:30-15:30	Infrastructure Visit: Dr. Atiq-ur-Rehman, Departmental Coordinator <ul style="list-style-type: none"> • Departmental and main Library • Computer Labs, Internet and multimedia facilities • Classrooms number & size with multimedia facility • Faculty Offices & facilities, Committee room & seminar room etc
	15:30-16:00	Meeting of AIC for review and synthesis

Day 02	Time	Activity
	08:30-10:30	Faculty Meetings: 10-15 minutes with each Faculty Member <ul style="list-style-type: none"> • Graduation and Higher studies • Personal Background, courses being taught • Area of Interest Vs teaching –learning environment • Perception about the academic programs, Students and peers • Opportunities for professional growth • Research Opportunities • Salary Perception and other incentives, Job satisfactions • Teaching Load, student- teacher ratio • Meetings with Support Staff
	10:30-12:00	Classroom Visit: Two classrooms with 45 min. each <ul style="list-style-type: none"> • Students dropout rate (B. Sc & M. Sc) intake, admission response • Financial support, scholarships, interest free loans • Hostel accommodation, transport, outdoor –indoor sports • Medical facility, emergency, outdoor and indoor • Counseling & guidance, interaction with teachers • Students perception about degree programs • SWOT analysis on curriculum, faculty and other teaching-learning resources • Access and quality of services of main library and other facilities • Job prospects, placements , Alumni association • Students Interviews (B. Sc Hons final & M.Sc Hons) • Students Assessment System (Dr. Atiq-ur-Rehman, Dept. Coordinator) • Senior students views and suggestions to improve teaching-learning environment and facilities <p>* In case of no class, Meeting of AIC members with two groups of Undergraduate and Graduate (M. Sc Hons) students.</p>
	12:00-13:30	Prayers and Lunch
	13:30-14:30	SWOT Analysis: Faculty/Students view point <ul style="list-style-type: none"> • Strengths of Academic Programs • Weaknesses of Academic Programs • Opportunities for Academic Programs • Threats to Academic Programs
	14:30-15:00	Concluding Meeting with Chairman of the Department/HoD
	15:00-16:00	Concluding/Exit meeting with Dean <ul style="list-style-type: none"> • Salient Findings of the on-site review • Sharing of salient findings and recommendations • Program for submission of final report • Formulation of Recommendations • Next Procedure

**ANNEXURE-II:
Faculty profile-designation, qualification and experience**

Name	Designation	Academic Degree		Major Area	Teaching Experience (Years)		Publications
		Degree	Awarding Institution		Graduate	Under-graduate	
Dr. Rashida Atiq	Assistant Professor	Ph. D. Post Doc.	UAF Germ.	Plant Virology	15	15	18
Dr. Samiya Mehmood Khan	Assistant Professor	Ph. D.	UAF	Plant Mycology	10	10	18
Dr. Ateeq-ur-Reman	Assistant Professor	Ph. D.	UAF	Plant Nematology	5	5	11
Ms. Sobia Chohan	Assistant Professor	M. Sc. (Hons)	UAF	Plant Mycology	16	16	12
Dr. Ummad-ud-din Umar	Assistant Professor	Ph.D.	UAF	Plant Virology	1	1	3

ANNEXURE-III

Standards/criteria for degree awarding department: strength and quality of faculty

S. No	Parameters	HEC Criteria/ Standards	Department of Plant Pathology, BZU, Multan	AIC Remarks
1	Faculty strength	Minimum six teachers /Department	Four	Do not qualifies the minimum limit of HEC
2	Visiting faculty	20% of teaching staff	Nil	Not as per HEC Standards
3	Ph. D qualified faculty	At-least five Ph. D	Three	Not as per HEC Standards
4	Faculty composition	Prof: Assoc. Prof: Asstt. Prof: Lecturer (1:1:2:2)	0:0:4:0	Not as per HEC Standards
5	Teacher student ratio	1:20	B. Sc (Hons) Program 1:9	Below HEC Standards
6	Supporting staff vs teaching staff ratio	1:2	1:1.3	Below HEC limits
7	Teaching work load (Credit Hours/ week)	Prof: Assoc. Prof: Asstt. Prof: Lecturer (8, 8, 12 &12 Cr. Hr/Wk), respectively	Prof:Assoc. Prof: Asstt. Prof: Lecturer (0:0:12:0 Cr. Hr/Wk),	Not as per HEC Standards

ANNEXURE-IV

Scheme of studies for B. Sc. (Hons) Agriculture specialization in Plant Pathology degree program

1st SEMESTER		
Course No.	Course Title	Credit Hours
CSC-101	Introduction to Information and Communication Technologies	2(1-2)
ENG-101	Functional English	2(2-0)
ISL-101	Islamic Studies	2(2-0)
AGR-101	Basic Agriculture	3(2-2)
SES-101	Soil Science –I	3(2-2)
FST-101	Introduction to Food Science and Technology	3(2-2)
ASC-101	Introduction to Animal Sciences	3(2-2)
	Sub - Total	18
2nd SEMESTER		
STA-102	Statistics-I	3(3-0)
ENG-102	Communication Skills	2(2-0)
PKS-102	Pakistan Studies	2(2-0)
SES-102	Soil Science –II	3(2-2)
FST-102	Food Processing and Preservation	3(2-2)
AEC-102	Introduction to Economics and Agri. Economics	3(3-0)
AEE-102	Introduction to Agri. Extension Education	2(2-0)
	Sub - Total	18
3rd SEMESTER		
AGR-201	Field Crop Production-I	3(2-2)
PBG-201	Elementary Genetics	3(2-2)
ENT-201	Introductory Entomology	3(2-2)
PLP-201	Introduction to Plant Pathogens	3(2-2)
HORT-201	Introduction to Horticulture	3(2-2)
FRW-201	Introduction to Forestry and Watershed Management	3(2-2)
	Sub - Total	18
4th SEMESTER		
AGR-202	Field Crop Production –II	3(2-2)
PBG-202	Introductory Plant Breeding	3(2-2)
ENT-202	Applied Entomology	3(2-2)
PLP-202	Introductory Plant Pathology	3(2-2)
HORT-202	Horticultural Crop Production	3(2-2)
FRW-201	Introduction to Rangelands and Wildlife Management	3(2-2)
	Sub - Total	18
5th SEMESTER		
PLP-301	Introductory Mycology	3(2-2)
PLP-303	Introduction to Plant Parasitic Nematodes	3(2-2)
PLP-305	Introduction to Plant Prokaryotes	3(2-2)
PLP-307	Introduction to Plant Viruses	3(2-2)
PLP-309	Abiotic Diseases of Plants	3(2-2)
FMP-311	Farm Mechanization	2(1-2)
	Sub – Total	17
6th SEMESTER		
PLP-302	Diseases of Field Crops	3(2-2)
PLP-304	Diseases of Vegetable Crops	3(2-2)
PLP-306	Diseases of Fruits and Ornamentals	3(2-2)
PLP-308	Plant Disease Assessment	3(2-2)
PLP-310	Beneficial Microorganisms	3(2-2)
I&D-312	Irrigation Practices	2(1-2)
	Sub - Total	17
7th SEMESTER		

PLP-401	Plant Disease Management	3(2-2)
PLP-403	Plant Disease Diagnosis	3(2-2)
PLP-405	Introductory Forest Pathology	3(2-2)
PLP-407	Plant Resistance to Diseases	3(2-2)
PLP-409	Introduction to Molecular Plant Pathology	3(2-2)
STAT-401	Statistics-II	2(2-0)
	Sub - Total	17
	8th SEMESTER	
PLP-402	Plant Disease Epidemiology	3(2-2)
PLP-404	Pathocides, their action and Application	3(2-2)
PLP-406	Methods and Research Techniques in Plant Pathology	3(1-4)
PLP-408	Preparation of Research Projects and Scientific Writing	3(2-2)
PLP-410	Internship/ Project Study	4(0-4)
MAB-402	Introduction to Agri. Business	2(2-0)
	Sub - Total	18
	Total	141

ANNEXURE-V

Scheme of studies for M. Sc. (Hons) Agriculture specialization in Plant Pathology Degree Program

Minimum Credit Hours requirement for M. Sc (Hons) Agriculture specialization in Plant Pathology

Total Credit Hours = 47

Course work (Credit Hours) = 36

Research (Thesis) & Seminar-I (Credit Hours) = 11

Course Title		
Course No.	M. Sc. (Hons.) 1 st Year Spring Semester	Credit Hours
PLP-702	Fungal Plant Pathology	3(2-2)
PLP-707	Plant Nematology	3(2-2)
PLP-708	Plant Bacteriology	3(2-2)
PLP-709	Plant Virology	3(2-2)
	Total Credit Hours Major courses	12
AGR-521	Field Crop Experimentation	3(2-2)
	Minor (Elective)	3(2-2)
	Total Credit Hours Minor courses	6
	M. Sc. (Hons.) 1st Year Fall Semester	
PLP-706	Integrated Plant Disease Management	3(2-2)
PLP-710	Insects in Relation to Plant Diseases	3(2-2)
PLP-715	Biochemistry and Physiology of Diseased Plants	3(2-2)
PLP-717	Urban Plant Pathology	3(2-2)
	Total Credit Hours Major courses	12
	Minor (Elective) I	3(2-2)
	Minor (Elective) II	3(2-2)
	Total Credit Hours Minor courses	6
	Total Credit Hours Major courses of 1 st Year Spring & Fall Semester	
		24
	Total Credit Hours Minor courses of 1 st Year Spring & Fall Semester	
		12
	Total Credit Hours Major & Minor courses at 2:1	
		24:12
	Total Credit Hours for Research + Thesis Seminar-I	
		11
	Total Credit Hours of Course Work + Research Thesis	
		47

ANNEXURE-VI**Scheme of studies for Ph. D (Hons.) in Plant Pathology Degree Program**

Minimum Credit Hours requirement for Ph. D in Plant Pathology

Total Credit Hours = 49

Course work (Credit Hours) = 27

Research (Thesis) & Seminar-I (Credit Hours) = 22

Course Title		
Course No.	Ph. D Semester-I Spring	Credit Hours
PLP-713	Molecular Plant Virology	3(2-2)
PLP-714	Ecology and Epidemiology of Plant Diseases	3(2-2)
	Total Credit Hours Major courses	6
	Minor (Elective) I	3(2-2)
	Minor (Elective) II	3(2-2)
	Total Credit Hours Minor courses	6
	Ph. D Semester-II Fall	
PLP-716	Genetics of Plant Pathogens	3(3-0)
PLP-718	Advances in Plant Pathology	3(2-2)
	Total Credit Hours Major courses	6
	Minor (Elective) I I	3(2-2)
	Total Credit Hours Minor courses	3
	Ph. D Semester-III Spring	
	Major course I	3(2-2)
	Major course II	3(2-2)
	Total Credit Hours Major courses	6
	Ph. D Second-Fourth Year- Semester IV-VIII	
	Seminar- II (Ph.D. Synopsis)	1(1-0)
	Seminar-III (Ph.D. Thesis)	1(1-0)
	Research Thesis (Ph.D.)	20(0-20)
	Total Credit Hours Major courses Semester I-III	18
	Total Credit Hours Minor courses Semester I-	9
	Total Credit Hours Major & Minor courses at 2:1	18:9
	Total Credit Hours for Research + Thesis Seminar-II & III	22
	Total Credit Hours of Course Work + Research Thesis	49

**Annexure-VII:
List of major equipment in Department of Plant Pathology, BZU, Multan**

S. No	Name	Make/Model	Quantity
1.	Refrigerated Centrifuge Machine	Centurion, Scientific Limited. U.K./ R220	01
2.	Incubator (30 ⁰ C-80 ⁰ C)	Gallenkamp, Economy Size 1	01
3.	Microwave Oven	Homage	01
4.	Autoclave (High pressure steam sterilizer	Robus Technologies UK,	01
5.	Autoclave(stainless steel)	Local, surgical type	02
6.	Microscopes	Swift – M3200	06
7.	Electric-heated stainless steel distiller (5 L / hr)	China	01
8.	pH meter	Germany, InoLab pH/COND 720	01
9.	Weighing Machine	Want WT6002-D	01
10.	Gel Apparatus	Bio-Rad	01
11.	PCR Machine with accessories	Bio-Rad	01
12.	Micropipettes 10-100 µl (Eppendorf)	Germany, Physiocare Concept	01
13.	Magnetic hot plate	Jiangsu Zhengji Instruments Co. Ltd.	01
14.	Refrigerator	Dawlance	01
15.	Laminar Flow (safety cabinet)	AIRSTREAM.ESCO Class11 Bsc	01
16.	Incubator (Oven)	Menmert type INB200,700C.440W	02
17.	Over head projector	Gaylord 3000	01
18.	Multimedia		01
19.	Nematode detection kit	Ogawa Seiki Co. Ltd, Japan	01
20.	Hot Box Oven (40 ⁰ C-200 ⁰ C)	Gallenkamp, (Economy)	01
21.	Electric grinder mixer	ST	01
22.	Hand grinder	Anex	01
23.	Colony counter/ Haemocytometer		01
24.	Nematode detection Kit		01

**ANNEXURE-VIII:
Supporting staff-designation, qualification and experience**

Name	Designation	Qualification	Experience (Years)
Muhammad Nawas	Admin Officer	B.A	3
Azhar Hussain	Lab. Attendant	SSC	7
Jalil Ahamad	Lab. Attendant	SSC	3

**ANNEXURE -IX
List of major farm equipment and machinery at BZU, Multan**

S. No.	Name	Quantity
1	Rotavator	1
2	Laser leveling	1
3	Ridger for ploughing in cotton field	1
4	Rabi seed drill	1
5	Cultivator with 13 plough	2
6	Cultivator with 11 plough	1
7	Blades	3
8	Ridge maker	1
9	Tractor	5
10	Hydraulic trolley	1
11	Chisel plough	1
12	Grass cutter machine	1
13	Front blades witted with tractor	1

ANNEXURE-X
Details of student's intake in the Department of Plant Pathology

Year	B. Sc (Hons)				M. Sc (Hons)				Ph. D
	5 th	6 th	7 th	8 th	I	II	III	IV	
2009-10	11	11	20	20	---	---	---	---	01
2010-11	16	16	11	11	12	12	---	---	---
2011-12	07	07	16	16	08	05	12	12	01
2012-13	10	10	07	07	13	13	05	05	01
Total	44	44	54	54	33	30	17	17	03

ANNEXURE-XI
Detail of funded research projects: P.I. and funding source, cost and status

S. No	Title of the project	Name of PI	Funding Agency	Cost (Rs)	Status
1	Forecasting of <i>Cotton leaf curl virus</i> disease epidemics and mass production of bio-control agents for its managements	Dr. Rashida Parveen	UGC	0.05 M	completed
2	Viral diseases of tomato and its biological control	Dr. Rashida Parveen	B Z U	0.02 M	completed
3	Screening & management of <i>Cucumber mosaic virus</i>	Dr. Rashida Parveen	B Z U	0.02 M	submitted
4	Cultivation of different strains of oyster mushroom on different substrates in Southern Punjab	Dr. Sammyia M. Khan	B Z U	0.01 M	completed
5	Commercial cultivation of different strains of oyster mushroom	Dr. Sammyia M. Khan	B Z U	0.075 M	completed
6	Study of delay released chemicals and carbon, nitrogen sources on oyster mushroom cultivation	Dr. Sammyia M. Khan	B Z U	0.07 M	ongoing
7	Survey & integrated management of plant parasitic nematodes in fruits and vegetables	Dr. Atiq-ur-Rehman	Punjab Govt	1.60 M	completed
8	Identification of citrus greening disease and its management through biochemicals	Dr. Atiq-ur-Rehman	B Z U	0.191M	submitted
9	Etiology of shesham decline	Mrs. Sobia Chohan	B Z U	1.00 M	completed
10	Antifungal Activity and Phytochemical Analysis of Various Medicinal Plants Against Pathogenic Fungi of Tomato	Mrs. Sobia Chohan	B Z U	0.22 M	ongoing
11	Identification, distribution and characterization of virus and virus like diseases of Citrus in Southern Punjab	Dr. Ummad-ud-Din Umar	H E C	0.50 M	ongoing