

PLANT PATHOLOGY
Department of Agriculture &
Agribusiness Management
University of Karachi



(SELF ASSESSMENT REPORT)
SAR-2023

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Introduction

Sindh produces 35% of the rice, 28% of sugarcane, 12% of wheat, 20% of the cotton, 88% of chilies, 73% of bananas, and 34% of the mangoes produced by Pakistan. Sindh also produces fodder, pulses, condiments, oilseeds, fruits, vegetables and has a large livestock industry as well.

Karachi is the business hub of Pakistan. Majority of the multinational and local agricultural companies are based in Karachi. Apart from this, major agriculture export and import activities are carried out in Karachi. To create the manpower in the field of agriculture in Karachi, University of Karachi has created a Department of Agriculture & Agribusiness Management to structure a roadmap to counter the challenges faced by the farmers. The department offers specialized courses in Plant Pathology that enable the students acquire in-depth knowledge of diseases affecting crop, vegetable, fruit and ornamental plants in the country as well as the management strategies to overcome the problem.

CRITERION-1: PROGRAM MISSION, OBJECTIVES AND OUTCOMES

Programme Mission Statement

To develop well-educated and trained plant pathologists to combat the pre- and post-harvest diseases affecting crop productivity in the country

Standards:

Standards 1.1: Documented measurable objectives:

1. To provide up-to-date knowledge to the students for better understanding of different aspects of Plant Pathology
2. To enable the students to help the farming community for proper and environmentally safe treatment of plant diseases
3. Transferring the knowledge about Disease detection, Disease Management, Tissue culture and Mushroom identification and cultivation techniques amongst students for their job acquisition or self-employment

Outcomes:

After completion of the education, the students shall be able to:

1. Determine the plant pathogens accurately
2. Manage plant diseases
3. Learn and implement good agricultural practices (GAP) and environmentally friendly methods of disease management.
4. Plan and execute research proposal to study and manage plant diseases.
5. Can establish and manage the businesses related to Plant Pathology.
6. Undertake research related to various aspects of Plant Pathology.

Main elements of strategic plan to achieve mission and objectives

1. Up gradation of the curriculum keeping in view the issues related with plant diseases and the losses faced by the local growers and industry.
2. Monitor, review and enhance quality of academic and non-academic activities with the help of Quality Enhancement Cell.
3. Concept building through extensive laboratory usage.
4. Assigning projects to the students and providing opportunity to work with Master and PhD students to develop research skills.

5. Encouraging the participation of students in various trainings organized for local growers, NGOs etc.
6. Career Counseling for the students with regular interaction with people from local industry.

Program objectives assessment

Table 1: Objective assessment

Sr. #	Objectives	How Measured	When Measured	Improvement Identified	Improvement Made
1.	To provide up-to-date knowledge to the students for better understanding of different aspects of Plant Pathology	<ul style="list-style-type: none"> • Through Teacher Evaluation • Course Evaluation Questionnaire • Graduating students survey • Employer survey • Alumni survey 	2023	<ol style="list-style-type: none"> 1. As per evaluation, about 25% students did not agree with the fact that the program is meeting its objectives. 2. Lab facilities 3. Field work 4. Field visits 5. Collaboration with the national and international organizations 	<ol style="list-style-type: none"> 1. In order to achieve maximum program objectives, local and foreign teachers' trainings, workshops and refresher courses in teaching skills have been arranged. 2. Lab facilities have been improved where modern research and teaching equipment like ELIZA, PCR, Microtome, Photographic research microscope & Stereo-microscope for nematodes, B-II type safety Cabinets, CO₂ Incubators, Tissue culture, and HPLC have been made available. 3. About 18 acres of land have been acquired for field activity. 4. More visits to fields and different research stations and agriculture universities have been arranged for students. Students have been encouraged to participate in conferences/ seminars related to plant pathology. 5. MOUs have been signed with the international and national organizations to promote collaboration.
2.	To enable the students to help the farming community for proper and environmentally safe treatment of plant diseases	Evaluation of students' reports about the disease situations as observed during the field visits, identification of disease and pathogen, and possible	Each semester	Insufficient field visits and on-field training; non-availability of disease manuals	More visits and on-field training will be conducted during 2023; Disease compendia are being arranged for understanding of disease symptoms in the field.

		management strategies			
3.	Transferring the knowledge about Disease detection, Disease Management, Tissue culture and Mushroom identification and cultivation techniques amongst students for their job acquisition or self-employment	Assessment of reports of the relevant mini-project assigned to the students in different courses	Annually	Better training and guidance required	<ul style="list-style-type: none"> • More emphasis had been given to the relevant practical work • More seminars workshops have been planned to provide better understanding.

Standard 1-2: The program must have documented outcomes for graduating students. It must be demonstrated that the outcomes support the program objectives and that graduating student can perform these outcomes.

Standard 1.2: Objectives vs outcomes

Programs Objective	Programs Outcomes					
	1	2	3	4	5	6
1	***	***	***	***	*	***
2	***	***	***	***	**	***
3	***	***	***	***	***	***

Legend

*** denotes a substantial contribution to the objective and

** denotes a moderate contribution to the objective.

* denotes no contribution to the objective

Proforma 1 & 10 Course and Teacher Evaluation

Report submitted to the QEC office.

Proforma 2. Faculty course review report

Report submitted to the QEC office.

Proforma-3. Survey of Graduating Students

S.No.	Graduating students survey through Questionnaire: 2023	%
1.	The work in the program is adequate and induces a lot of knowledge	78
2.	The program is effective in enhancing team-working abilities	81
3.	The program administration is effective in supporting learning	83.5
4.	The program is effective in developing analytical and problem-solving skills	70.5
5.	The program is effective in developing independent thinking	79.5
6.	The program is effective in developing written communication skills	73
7.	The program is effective in developing planning abilities	72
8.	The objectives of the program have been fully achieved	71.5
9.	Whether the contents of the curriculum are advanced and meet program objectives	73.5
10.	The faculty was able to meet the program objectives	79
11.	The environment was conducive to learning	80.5
12.	Whether the Infrastructure of the department was good	78.5
13.	Whether the program was comprised of Co-curricular and extra-curricular activities	77
14.	Whether scholarships/ grants were available to students in case of hardship	67.5


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Proforma 7 Alumni Survey:

S.No.	Alumni survey through Questionnaire: 2023	%
I.	Knowledge	
1.	Math, Science, Humanities, and professional discipline	83
2.	Problem formulation and solving skills	83.33
3.	Collecting and analyzing appropriate data	81.66
4.	Ability to link theory to practice.	76.66
5.	Ability to design a system component or process	79.44
6.	Computer Knowledge	78.33
II.	Communications Skills	
1.	Oral Communication	75.55
2.	Report writing	83.33
3.	Presentation Skills	76.66
III.	Interpersonal Skills	
1.	Ability to work in teams	80.55
2.	Leadership	76
3.	Independent thinking	78.66
4.	Motivation	73.88
5.	Reliability	68.88
6.	Appreciation of ethical values	85
IV.	Management/ Leadership Skills	
1.	Resource and Time management skills	75
2.	Judgment	77.44
3.	Discipline	77.22
V	Department Status	
1.	Infrastructure	69.44
2.	Faculty	71.11
3.	Repute at the National level	72.77
4.	Repute at the International level	80.55


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Proforma 8 Employer Survey

S.No.	Employer survey through Questionnaire: 2023	%
I.	Knowledge	
1.	Math, Science, Humanities, and professional discipline	66.6
2.	Problem formulation and solving skills	68.75
3.	Collecting and analyzing appropriate data	65.8
4.	Ability to link theory to practice.	68.86
5.	Ability to design a system component or process	65
6.	Computer Knowledge	61
II.	Communication Skills	
1.	Oral Communication	63
2.	Report writing	60
3.	Presentation skills	67
III.	Inter personal Skills	
1.	Ability to work in teams.	71
2.	Leadership	69
3.	Independent thinking	67
4.	Motivation	63
5.	Reliability	71
6.	Appreciation of ethical values	74
IV.	Management/ Leadership Skills	
1.	Resource & Time Management Skill	69
2.	Judgment	66
3.	Discipline	68

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Standard 1-3: The results of the Program’s assessment and the extent to which they are used to improve the program must be documented.

Strength of the discipline

- New building having proper class rooms, full equipped research laboratories and advance equipment.
- It is charming for fresh students as it is the bachelor degree program in the field of Plant Pathology in agriculture that provide the knowledge and skills for the management of plant diseases.
- The Department offers M.Phil. and Ph.D. degree programs in Plant Pathology that cover the various aspects of plant pathology.
- The availability of highly qualified faculty.
- Collaborations with provincial and national Agricultural research organizations, FAO, PARC, HEJ, KIBJE
- Frequent trips and visit to different research organization and also progressive farmer fields.

Weakness of the discipline

1. Shortage of regular faculty.
2. Irregular contingencies and funding.
3. Shortage of funds for chemicals and glassware.
4. Shortage of supporting staff.

Quantitative Assessment of the Department

Standard 1-4: Overall performance using quantifiable measures.

Present Performance Measures for Research Activities till 2023

S. No.	Name of a faculty member	Research Papers	Projects Completed
1.	Prof. Dr. Saleem Shahzad	155	05
2.	Dr. Saboohi Raza	40	03
3.	Dr. Abdul Qayoom Rajput	25	02
4.	Dr. Shagufta Sehar	09	03
5.	Dr. Rana Mazhar Abbas	51	02
6.	Mr. Muttalib	-	-
7.	Ms. Namra Mohtashim	-	-

Faculty Satisfaction regarding the Administrative Services

Administrative meetings (departmental, university, academic council, and syndicates) are attended as and when required.

The department upholds a 4:1 ratio for the academic (technical) and administrative non-technical staff which fulfills the standard set by HEC. Proper records are maintained:

- Research Reports
- Assignments
- Tour reports
- Attendance report
- Evaluation report
- Student Enrolment

Table No: 5

Degree	Pre-requisites for the degrees in Agriculture (Plant Pathology)
BS Agriculture	At least 2.45 CGPA on completion of 144 credits hours in eight semesters
M.Phil. Agriculture	Completion of 24 credit hours of coursework with at least 3 CGPA and 6 credit hours of Thesis work
Ph.D. Agriculture	Completion of 18 credit hours of coursework and 12 credit hours of Thesis work

Major Future Improvement Plans

- Maintaining a better learning environment and standards of teaching.
- Rescheduling field visits incorporating plant pathology problems.
- To extend facilities for studying crops and stored grain pathogens, and develop extension material.
- Farmers field days, participatory research activities.
- Establishment of demonstration plots on farmers' fields.
- Arranging faculty training in advanced countries to equip them with the latest developments and research skills.

CRITERION 2: CURRICULUM DESIGN AND ORGANIZATION:

Degree Title: BS/M.Phil. /Ph. D

Curriculum design and update are initiated by the faculty members of the discipline after the approval of the Board of Studies which comprises senior faculty members and subject specialists from the department and other Universities or research Institutions. It is headed by the Chairperson of the Department. The approved curriculum is then sent to the Board of Faculty, headed by the Dean Faculty of Sciences. This Board consists of Chairmen/HODs from all the Departments of the faculty of science, including the Director of Academics and the Director of QEC. Finally, the curriculum is presented before the Academic Council, which is comprised of the Professors, Associate Professors, Faculty Representatives, and nominated experts.

Definition of Credit Hour

A student must complete a definite number of credit hours. One credit hour is one theory lecture or three hours of laboratory (practical)/per week. Each course is of 3 credit hours and carries 100 marks. The duration of the semester is 18 Weeks.

Pre-requisites Academic Requirements BS/MS/Ph.D.

A person holding a F.Sc. pre-medical/pre-engineering or equivalent from any recognized institute with at least a second division having overall 50 % marks is eligible for application submission for the BS program. Merit is determined based on marks in the pre-requisite examination.

Eligibility criteria for M.Phil. and Ph.D. includes at least 50% passing marks in the subject-based entry test followed by an interview before DRC members of the Department. 3 CGPA in the course work is mandatory for registration for the research work.

Degree Requirements BS/M.Phil./Ph.D.:

Degrees are awarded after completing the required number of credit hours (courses). The minimum CGPA for obtaining the BS degree is 2.45 and 3.0 for M.Phil. and Ph.D.

Examination Weightage BS/M.Phil./Ph.D.:

In coursework, student evaluation is done by mid-term examination, assignments/presentations/quizzes, and final examination. 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 shall be deemed Fail. The weightage to each component of the examination is as prescribed below:

Credit Hours (2+1)	%
Mid-term examination	20%
Assignments/Surprise test	10%
Final Theory examination	50%
Final Practical examination	20%

Credit Hours (3+0)	%
Mid-term examination	20%
Assignments/Surprise test	10%
Final Theory examination	70%

A student is eligible to appear in the examination if he/she has attended not less than 75% of the classes in theory and practical, separately. The minimum pass marks for each course are 50 % for the BS program.

Degree Plan

The BS Agriculture degree consists of a minimum of 8 semesters/4 years. A student must study 144 credit hours. The degree is awarded after completing courses/credit hours with at least a CGPA of 2.45.

A list of Courses offered by the Department of Agriculture and Agribusiness Management for specialization in Plant Pathology is given in Annexure-1

Standard 2.1: Assessment of the Curriculum of Plant Pathology

Course No.	Course Title	Objectives		
		1	2	3
AGR-502	Introduction to Plant Nematology	●	●	●
AGR-504	Epidemiology & Management of Plant Diseases	●	●	●
AGR-506	Diseases of Field Crops	●	●	●
AGR-509	Introductory Molecular Plant Pathology	●	○	●
AGR-511	Pesticides and their Application Techniques	●	●	●
AGR-513	Introductory Mycology	●	○	●
AGR-514	Introduction to Plant Viruses	●	●	●
AGR-515	Introduction to Plant Prokaryotes	●	●	●
AGR-516	Beneficial Microorganism	●	●	●
AGR-517	Methods and Techniques in Plant Pathology	●	○	●
AGR-519	Introductory Range and Forest Pathology	●	●	○

AGR-601	Plant Quarantine and SPS Methods	●	○	●
AGR-603	Diseases of Fruits, Vegetable and Ornamentals	●	●	●
AGR-606	Biotechnology & Molecular Techniques in Plants	●	○	●
AGR-608	International Agreements & Plant Protection	●	○	●
AGR-610	Pesticide Toxicology	●	●	●
AGR-611	Seed and Post -Harvest Pathology	●	●	●
AGR-612	Integrated Plant Diseases Management	●	●	●
AGR-613	Abiotic Diseases of Plants	●	●	●
AGR-615	Post-Harvest Processing and Managements	●	○	●
AGR-632	Special Problem/Internship (0+6)	●	●	●

Legend

- denotes a substantial contribution to the objective
- denotes a moderate contribution to the objective.
- denotes no contribution to the objective.

The Curriculum fits very well and satisfies the core requirements for the program, as specified by 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 (HEC) in curriculum for Plant Pathology in 2014.

Standard 2.2: Theoretical background, problem analysis, and solution design in the program material.

Elements	Course No.	Course Title
Theoretical and Practical Background	AGR-502	Introduction to Plant Nematology
	AGR-504	Epidemiology & Management of Plant Diseases
	AGR-506	Diseases of Field Crops
	AGR-508	Insect Pests of Field Crops
	AGR-509	Introductory Molecular Plant Pathology
	AGR-511	Pesticides and their Application Techniques
	AGR-513	Introductory Mycology
	AGR-514	Introduction to Plant Viruses
	AGR-515	Introduction to Plant Prokaryotes
	AGR-516	Beneficial Microorganism
	AGR-517	Methods and Techniques in Plant Pathology
	AGR-519	Introductory Range and Forest Pathology
	AGR-601	Plant Quarantine and SPS Methods
	AGR-603	Diseases of Fruits, Vegetable and Ornamentals
	AGR-605	Insect Pest of Fruits, Vegetable and Ornamentals
	AGR-606	Biotechnology & Molecular Techniques in Plants
	AGR-608	International Agreements & Plant Protection
	AGR-610	Pesticide Toxicology
AGR-611	Seed and Post -Harvest Pathology	
AGR-612	Integrated Plant Diseases Management	
AGR-613	Abiotic Diseases of Plants	
AGR-615	Post-Harvest Processing and Managements	
Problem analysis/ Solution Design	AGR-632	Special Problem/Internship (0+6)

Standard 2.3: Credit hours distribution

Elements	Credit hours/ semester	Total credit hours	Theory	practical
BS Agriculture	18	144	100	44

Standard 2.4: Credit hours and HEC requirement

The courses offered by the discipline of Plant Pathology meet the minimum criteria as laid down by Higher Education Commission.

Standard 2.5: Attendance requirement

Attendance required in each course is 75%, below which the student is not allowed to sit in the examination.

Standard 2.6: The information technology component of the curriculum must be integrated throughout the program.

S#	Course	I.T Component
01	Methods & Research Techniques in Plant Pathology	Use of computer software in Plant Pathology, data analysis, digital library search.
02	Plant Disease Epidemiology	Forecasting of epidemics and their modeling; and development of disease warning systems.
03	Computer Applications (Compulsory) Statistics 1 & 2	One computer (3 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.

Standard 2.7: Enhancing Oral and Written Communication Skills of the students

- Assignments are given to students relevant to courses having practical usage which are presented by them orally and submitted as written reports. This practice not only increases their knowledge but also enhances their oral and written communication skills.
- A 3 credit hours course “Communication Skills” has also been included in the curriculum.

CRITERION 3: LABORATORIES AND COMPUTER FACILITIES

Laboratory Titles:

1. Molecular Plant Pathology Lab
2. Plant Disease Research Lab
3. Pesticides Toxicology Lab
4. Seed Testing Lab
5. Plant Tissues Culture Lab
6. Undergraduate labs (05)

Location and Area

Old building Department of Agriculture & Agribusiness Management, University of Karachi, Main Campus

Objectives of the Laboratories

1. Research work for graduate and post-graduate students.
2. Used for the execution of research/development projects funded by HEC, PSF, PARC, and other national and international agencies/institutions.
3. Practical exercise and demonstrations to graduate students in their introductory and major courses

Future Need

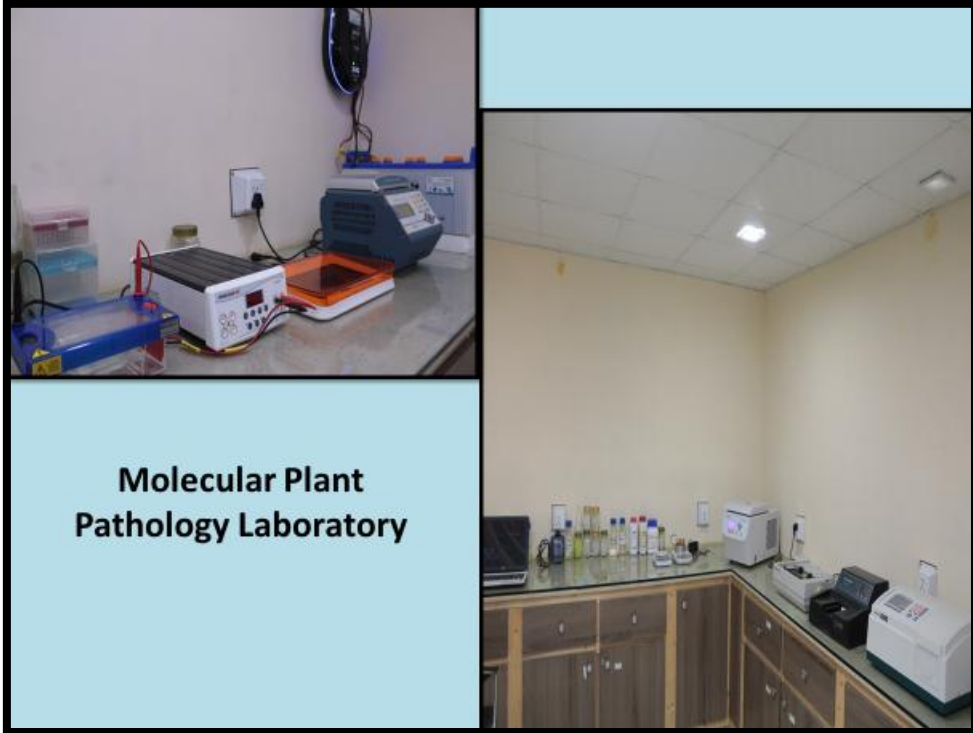
More spacious and well-equipped laboratories to fulfill the contemporary level of research/education are necessitated for better output.



WELL EQUIPPED CLASSROOMS



SEMINAR LIBRARY



Plant Tissue culture lab



Standard 3.1: Laboratory manuals/documentation/instructions for experiments

Laboratory manuals for all courses are available and provided to the students each semester.

Standard 3-2: Support personnel for instruction and maintaining the laboratories.

1.	Muhammad Miraj Uddin	Lab Assistant
2.	Shakir Hussain	Office Assistant
3.	Rizwan Siddiqui	C. C. T.
4.	Muhammad Afzal	Lab Assistant
5.	Masroor Ali	Garden Mistry
6.	Muhammad Shahid	Lab Assistant

Standard 3-3: Computing infrastructure and facilities

Computer facilities:

04 Computers are available for teachers, 02 for the other staff, but none for the students at the Department, however a centralized computer lab with > 20 computers in and at LEJ digital lab for the students.

CRITERION 4: STUDENT SUPPORT AND ADVISING

After the recommendation, students get financial assistance from various sources like HEC need-based scholarships, Karachi University alumni, Musajee & Sons, and other funding agencies.

Standard 4-1: Number and frequency of courses offered for the students.

- Courses are taught as per the policy of HEC Plant Pathology revised in 2014. Total 48 courses in 4 years and 6 courses in each semester.

Standard 4-2: Courses offered in the major area of study.

- A total of 24 courses are taught in the last two years including mandatory internships and projects
- Courses are structured and decided in the board of study meetings.
- Emphasis is always given to effective interaction between each section.

Standard 4-3: Academic advising and guidance on making course decisions and career choices

- Students are advised about the program requirements by the faculty and career counseling by the student advisor
- Students are also welcome to consult their relevant teachers whenever they face any professional problem.
- During the course work various visits of research institutes, grower' fields, and other departments have been conducted on routine basis to establish the idea for current on-going problems and market demand of graduates.

CRITERION 5: PROCESS CONTROL

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

Standard 5-1: Criteria for admission of students in the discipline

- Students of BS Agriculture 5th semester choose the discipline of Plant Pathology out of the total three available disciplines.
- The growing interest of the student to acquire admission in the discipline of Plant Pathology admired that the test also contains some general questions in the field of Plant Pathology to check the aptitude of students

Table No. 6. Admission requirements in the department

Degree	Pre-requisites
BS Agriculture	<ul style="list-style-type: none">• F.Sc. (Pre-medical/Engineering or equivalent)
M.Phil. in Agriculture	<ul style="list-style-type: none">• At least sixteen years of studies or equivalent qualification with at least a second division in agriculture• Subjective test /NTS subjective test followed by an interview
Ph.D. in Agriculture	<ul style="list-style-type: none">• M.Phil., M.Sc. (Hons), or equivalent qualification in Agriculture from an HEC-recognized university/institution• Subjective test /NTS subjective test followed by an interview

Standard 5-2: Student registration/admission procedure.

- The student names, after completion of the admission process, are forwarded to the registrar's office and the directorate of admissions for proper registration in the specific program, and registration numbers are issued to the students.

Standards 5-3: Faculty recruitment procedure.

- As per HEC & KU criteria

Standard 5-4: Process and procedures used for ensuring teaching and delivery of course material to the students for emphasizing active learning.

- To help provide high-quality teaching, Department periodically revises the curriculum depending on requirements, innovations, and new technology
- With the emergence of new fields, new courses are set up and included in the curriculum. Lecture notes are also prepared by the teachers and given to the students.
- Most of the lectures are supplemented by multimedia and other audio-visual aids.
- All-out efforts are made so that the courses and knowledge imparted should meet the objectives and outcomes. Progress is regularly reviewed in the faculty meetings.

Standard 5-5: Process for ensuring that the graduates meet the requirements

The examination is conducted as per the academic calendar of the university.
The question papers cover the entire syllabus of the course.

CRITERION 6: FACULTY

Standard 6-1: Full-time faculty for the discipline of Plant Pathology

S. No.	Name of faculty member	Designation	Qualification	Name of Country Awarding Highest Degree	Date of Birth	Email address
1.	Prof. Dr. Saleem Shahzad	Meritorious Professor	Ph. D.	Pakistan	28-08-1960	sshahzad@uok.edu.pk
2.	Dr. Saboohi Raza	Associate Professor	Ph. D.	Pakistan	03/04/1974	razasaboohi@uok.edu.pk
3.	Dr. Rana Mazhar Abbas	Associate Professor	Ph. D.	Pakistan	08/08/1977	mazhar.abbas@uok.edu.pk
4.	Dr. Abdul Qayoom	Assistant Professor	Ph. D.	Pakistan	23-03-1977	aqayoom@uok.edu.pk
5.	Dr. Shagufta Sehar	Assistant Professor	Ph. D.	Pakistan	04-01-1988	shagufta.sahar@uok.edu.pk
6.						

Table: 8 Faculty Distribution by Program Areas

S. No.	Area of Specialization	Faculty members
1.	Plant Pathology	Prof. Dr. Saleem Shahzad
2.	Agriculture Biotechnology and Molecular Plant Pathology	Dr. Saboohi Raza
3.	Horticulturist/Plant Virologist	Dr. Rana Mazhar Abbas
4.	Plant Pathology	Dr. Abdul Qayoom
5.	Plant Protection/Agricultural Biotechnology	Dr. Shagufta Sehar
6.		

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.

- Faculty members continuously update their knowledge by communicating the recent developments in their field of specialization through the latest books and research publications.
- Training programs offered by different national and international institutes in relevant fields are also attended by the faculty members to enhance their skills.

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

Yes.

CRITERION – 7: INSTITUTIONAL FACILITIES

Standard 7.1: The institutional infrastructure

1. The department has five spacious classrooms and 07 teaching labs for the BS students.
2. The department is well-equipped with 07 research laboratories.
3. Computer with internet facilities are available to the faculty/students and administrative staff.

Standard 7.2: Books in the library relevant to the discipline of Plant Pathology

The University Central Library has many books and hard copies of the latest journals. The department seminar library has more than 1000 books available and more than 400 books on plant pathology discipline including textbooks recommended by HEC.

Standard 7.3: Classrooms must be adequately equipped, and offices must be adequate to enable faculty to carry out their responsibilities.

1. Each class is well equipped with multimedia projector and a sound system.
2. The faculty has adequate offices with furniture and fixtures.
3. Teaching labs are equipped with the necessary equipment.

CRITERION – 8: INSTITUTIONAL SUPPORT

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.

Individual research grants for faculty are available. There is a dire need to increase the financial resources to be allocated to the department to establish laboratories and a departmental digital library as well.

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

The department offers admission annually to BS, M.Phil. and Ph.D. programs

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
BS	8	8	4	5	2	7	10	17	12	7	17	5	05
M.Phil.	1	5	3	1	3	2	1	1	1	2	6	2	00
Ph.D.												01	01

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

Adequate funds are provided annually for the seminar library, the computer lab is also available at the department, however, students use LEJ digital library for their studies.

Annexure-1. SCHEME OF STUDY/LIST OF COURSES

Course Title	First Year (First Semester)	Cr. Hr.
AGR-311	Introduction to Agriculture and Agribusiness	3+0
AGR-301	Basic Soil Science	2+1
AGR-303	Mechanization in Agriculture	2+1
AGR-305	Field Crop Production	2+1
300.1 FM	Mathematics I	3+0
AGR-300.1 FB	Biology I	2+1
AGR-300.1 E	English	3+0
Course Title	First Year (Second Semester)	Cr. Hr.
AGR-312	Introduction to Plant Protection	2+1
AGR-302	General Horticulture	2+1
AGR-304	Communication Skills	3+0
AGR-306	Introduction to Food Science & Technology	2+1
300.2 (F.M)	Mathematics-II (Compulsory)	3+0
300.2 (F.B)	Biology - II (Compulsory)	2+1
300.2 (I.S)	Islamic Studies (Compulsory)	3+0
Course Title	Second Year (Third Semester)	Cr. Hr.
AGR-400.1 (P.S)	Pakistan Studies	3+0
AGR-401	Introductory Plant Entomology	2+1
AGR-403	Economics of Agricultural Production	3+0
AGR-405	Introduction to Crop Physiology and Biochemistry	2+1
AGR-407	Fundamentals of Animal Husbandry	2+1
AGR-409	Basic Agricultural Statistics I	2+1
Course Title	Second Year (Fourth Semester)	Cr. Hr.
AGR-400.2 (U)	Urdu (Compulsory)	3+0
AGR-400.2 (C.A)	Computer Applications (Compulsory)	2+1
AGR-402	Introduction to Plant Pathology	2+1
AGR-404	Introduction to Plant Breeding & Genetics	2+1
AGR-408	Agricultural Microbiology	2+1
AGR-410	Basic Agricultural Statistics – II	2+1
Course Title	Third Year (Fifth Semester)	Cr. Hr.
AGR-509	Introductory Molecular Plant Pathology	2+1
AGR-511	Pesticides and their Application Techniques	2+1
AGR-513	Introductory Mycology	2+1
AGR-515	Introduction to Plant Prokaryotes	2+1
AGR-517	Methods and Techniques in Plant Pathology	2+1
AGR-519	Introductory Range and Forest Pathology	2+1
Course Title	Third Year (Sixth Semester)	Cr. Hr.

AGR-502	Introduction to Plant Nematology	2+1
AGR-504	Epidemiology & Management of Plant Diseases	2+1
AGR-506	Diseases of Field Crops	2+1
AGR-508	Insect Pests of Field Crops	2+1
AGR-514	Introduction to Plant Viruses	2+1
AGR-516	Beneficial Microorganism	2+1
Course Title	Fourth Year (Seventh Semester)	Cr. Hr.
AGR-601	Plant Quarantine and SPS Methods	3+0
AGR-603	Diseases of Fruits, Vegetable and Ornamentals	2+1
AGR-605	Insect Pest of Fruits, Vegetable and Ornamentals	2+1
AGR-611	Seed and Post -Harvest Pathology	2+1
AGR-613	Abiotic Diseases of Plants	2+1
AGR-615	Post-Harvest Processing and Managements	2+1
Course Title	Fourth Year (Eighth Semester)	Cr. Hr.
AGR-606	Biotechnology & Molecular Techniques in Plants	2+1
AGR-608	International Agreements & Plant Protection	3+0
AGR-610	Pesticide Toxicology	2+1
AGR-612	Integrated Plant Diseases Management	2+1
AGR-632	Thesis/Internship + Project	0+6
Course Title	MS (First Semester)	Cr. Hr.
AGR-701	Research Methodology (Optional Course)	3+0
AGR-703	Pesticide Resistance Management (Optional Course)	2+1
AGR-707	Biochemistry and Physiology of Diseased Plants (Optional Course)	2+1
AGR-709	Plant Nematology (Core Course)	2+1
AGR-717	Mycology-I (Optional Course)	2+1
Course Title	MS (Second Semester)	Cr. Hr.
AGR-702	Host Plant Resistance (Optional Course)	3+0
AGR-708	Plant Virology (Core Course)	2+1
AGR-710	Plant Bacteriology (Core Course)	2+1
AGR-712	Fungal Plant Pathology (Core Course)	2+1
AGR-714	Mycology II (Optional Course)	2+1