



# **SELF ASSESMENT REPORT SAR-2022**

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## INTRODUCTION

The department of Botany was established in 1980 with only 3 faculty members. It was one of the premier departments of the university when this university was a campus of University of Sindh, Jamshoro. At the start, the department was primarily engaged in teaching; however, the research was carried out only on a limited scale. With the passage of time, when the campus became a full-fledged university in the year 1987, the research activities of the department increased. A number of the students registered for the degree of M.Phil. leading to Ph.D. The year 2007 was another milestone in the history of the department when two research institutes, Date Palm Research Institute (DPRI) and Shah Latif University Botanical Garden and Herbarium (now Center for Biodiversity & Conservation) established and working as collaborative units of the department.

The department has started Bachelor of Science (BS)-4-Year program in 2004. The students are being taught various subjects of Botany with special papers offered at the graduate level. The department also offers Botany courses as minor subjects to other Science Departments. Recently, the department has started taught cum research program for the degrees of M.S. / M.Phil. and Ph.D. The classes for these degrees are running regularly and are being taught by five senior faculty members holding Ph.D. while three teaching assistants are also actively involved in teaching.



# CRITERION 1: PROGRAM MISSION, OBJECTIVE AND OUTCOMES

Standards 1.1: The program must have documented measurable Objectives that support Faculty / Institution Mission Statements.

## Mission Statement of the University

- a) To achieve and attain Quality Standards and become a Model by providing an outstanding educational environment.
- b) Taking measures for capacity building of faculty and supporting staff.
- c) Establishing a system to enhance research objectively developed, avoid those policies which encourage malicious activities.

## Program Mission

To produce erudite scientists in the field of Botany, who render their services with a sense of dedication, motivation and hard work for strengthening the quality culture of life sciences in the Country.

## Program Objectives

- a) To produce graduates who can execute enthusiastically in education and research.
- b) To build up the graduates with a sense of dedication, motivation and hard work so that they can play their role to maintain and uplift the quality culture of life sciences in the country.
- c) To guide students for independent and self-motivated in the field of research



## Program Objectives Assessment

Following table shows how Objectives are measured and Improvements have been identified.

Objectives	How Measured	When measured	Improvement Identified
To produce graduates who can execute enthusiastically in education and research	Most of the students are employed in educational, research and other related institutions.	At the end of every academic year	Classrooms need to be equipped with multi-media & computer facility
To build up the graduates with a sense of dedication, motivation and hard work so that they can play their role to maintain and uplift the quality culture of life sciences in the country.	1). Highest number of graduates of the department qualifies for competitive exams for various posts, especially in education. 2). A good number of publications in journals of higher repute come out as a result of research carried out in the department.	After each selection board is conducted by various provincial, national & private sectors.	Although CBC & DPRI are collaborative units and well equipped with research facilities, there is a great need to improve lab: facilities in the department.
To Guide students for independent and self-motivated in the field of research.	Through assessing students during research-oriented entry tests, interviews, and preparation of synopsis.	At the start of each academic year for admission in Masters and M.Phil./PhD.	Need to train the students and lab technicians to operate equipments and observe precautionary measures during experimentation.

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 students are capable of performing these outcomes.

## Program outcomes

Program Objectives	Program Outcomes		
	1.	2.	3.
1) To produce graduates who can execute enthusiastically in education and research.	Skilled & qualified Botanists are to be produced.	The outgoing postgraduates are being largely absorbed particularly in teaching, and research organizations for the degrees of M.Phil. & Ph.D.	Students develop ability to apply knowledge of various aspects of the subject.
2) To build up the graduates with a sense of dedication, motivation and hard work so that they can play their role to maintain and uplift the quality culture of life sciences in the country.	To inculcate the graduates with a sense of dedication, motivation and hard work so that they can maintain and uplift the standard of life sciences in the country	Students buildup confidence and communicate effectively in writing and oral demonstration.	Graduates develop an ability to demonstrate progress in various fields.
3) To Guide students for independent and self-motivated in the field of research.	The graduated students play significant role after joining faculty positions at colleges, universities and other research as well educational institutes.	To make them self-reliant and self-motivated in pursuing cutting edge research.	The students after graduation are employed in public and private-sector research and development, as researchers, and as administrators in Provincial & Federal agencies.

## Alumni Survey

The data have been collected from the students, who graduated from the university and working at different institutes/departments, regarding the quality of education they received and experienced in the university. The next will be conducted after 2 years.

### General Assessment Alumni Survey:

- Poor in IT knowledge, Collecting and analyzing appropriate data, Report writing and presentation skills.

√. Excellent ability working in a team

√. Good in oral presentation,

√. Independent thinking and



- √. Sound in discipline
- √. Ability Problem formulation and solving skills

#### General Comments:

Almost all have given comments that there must be a very comprehensive computer related teaching method, group discussion, research project preparation & presentation.

#### Assessment of Employer survey

The employer survey has been conducted. The same will be conducted after a couple of years. The following overall outputs have been obtained by the employer regarding the performance of the graduates' educated from the university and working at their departments/institutes.

#### Weaknesses & Strengths of the program

Weaknesses	Strengths	General Comments
a) Computer knowledge. (D) b) Report writing c) Report writing & Presentation skills (E) d) Time management skills (D)	a) Ability to work in teams, Motivations (B) b) Discipline (B)	The students may be given computer skills, collecting data, analysis, report preparation and final presentation.

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

- 75% Percentage of the employers that is strongly satisfied with the performance of the departments' graduates.

Program Objectives	Program Outcomes		
	1	2	3
To produce graduates who can execute enthusiastically in education and research.	XXXX	XXX	XXX
To build up the graduates with a sense of dedication, motivation and hard work so that they can play their role to maintain and uplift the quality culture of life sciences in the country.	XXX	XXX	XXX
To Guide students for independent and self-motivated in the field of research.	XXXX	XXX	XXX
X	Relevant & satisfactory to some extent		
XX	Relevant & satisfactory		
XXX	Very relevant & satisfactory		
XXXX	Highly relevant & highly satisfactory		

Standard 1-3. The result of the program's assessment and the extent to which they are used to improve the program must be documented.

### Major Future Improvement Plans

- To impart quality education in the department using audiovisual aids and modern tools along with provision of the latest literature, journals, books, reviews and access to internet.
- To upgrade Graduate & Post Graduate Laboratories with the modern & sophisticated equipments
- To emphasize problem-oriented research work on specific areas related to plants.
- Overall enhancement of knowledge and skills of faculty members in relation to the latest global advancements in various disciplines through exchange programs, short trainings and collaborative research projects within and outside country.

### Program Strengths and weaknesses

Program	Strengths	Weaknesses	Things to be developed	Activities took for improvements
BS.I- BS.IV M. Sc./ M.S./ M. Phil./ Ph. D.	Very good teaching and research facilities in the areas of Plant Taxonomy, Physiology, Soil science, Ecology, Genetics & Plant Breeding. Bioinformatics, Plant Omics, Biotechnology	Insufficient/outdated/out of order equipments for conducting lab practical in the department.	Relevant books & Journal, Multimedia facility, Laboratory, IT training, Software knowledge relevant to Bioinformatics	Two research projects to improve laboratory, Audiovisuals facilities provided through aid form OGDCL, for three classrooms, Post graduate conference room,



Standard 1.4: The department must assess its overall performance periodically using quantifiable measures.

Number of student enrolment during last three years and student faculty ratio

Program	Enrollment Year 2019	Students/ Faculty Ratio	Enrollment Year 2020	Students/ Faculty Ratio	Enrollment Year 2021	Students/ Faculty Ratio	Enrollment Year 2022	Students/ Faculty Ratio
BS 4Yr	79	11.3:1	75	10.7:1	70	11.6:1	82	16.4:1
M.Sc.	39	5.6:1	44	6.3:1	05	0.8:1	06	1.2 : 1
M.Phil./MS	19	2.7:1	26	3.7:1	28	4.7:1	----	----
Ph.D.	07	1:1	05	0.7:1	06	1:1	----	----

## Student Course Evaluation

### Program Assessment Analysis

The Student Course Evaluation Questionnaire filled by the students at the time of course completion. The following are overall views of the students. The data for the performance has been collected from more than 20 students selected randomly.

### Student Course Evaluation Assessment:

#### Weaknesses:

- Attendance of the student's is not satisfactory as, 70 % student meet the attendance requirement of 75% and above.
- The provision of learning resources in the library is insufficient. Only 67% students think that the required learning resources in the library are adequate and appropriate.
- Assessment methods and timely feedback of assessment is poor, it requires more attention.
- Practical material and demonstration are weak, needs to be improved.
- Students may be encouraged more to participate in the lecture/group discussion.

**Strengths:**

- Course objectives very clear and organized.
- Teaching methods, learning and learning outcomes encouraging, but need to be improved.
- Class environment satisfactory.
- Courses are interesting, useful and helpful for future.

**General comments by the students:**

Usage of visual demonstrations and multimedia can make the course interesting and effective. Multimedia should be used to deliver lectures.

**Number of publications, awards, workshops & seminars organized by the faculty from 2019-2022**

Publications (HEC recognized only)		Research Projects		Workshop/seminar	Awards	Scholars produced		Organized National & International Conferences
National	International	Completed	Ongoing			M. Phil. / M.S.	Ph.D.	
09	17	0	02	03	0	20	04	00



## CRITERION 2: CURRICULUM DESIGN AND ORGANIZATION

The curriculum must be designed and organized to achieve the program's objectives and outcomes. Also course objectives must be in line with the program outcomes.

### Program: BS Degree: (4 Years; 8 Semesters) Curriculum

	Course No.	Course Title	Credit Hours
Semester 01 Total Cr Hrs. 18	ENG-300	English -I	3
	PAKST-300	Pakistan Studies	2
	BOTN-300	Mathematics	3
	BOTN-310 / 311	Diversity of Plants / Lab	3 + 1
	ZOOI-320 /321	Zoology-1 / Lab	2 + 1
	CHEM-320	Biochemistry-1 / Lab	2 + 1
Semester 02 Total Cr Hrs 18	ENG-301	English -II	3
	ISST/ETHS-301	Islamic Studies/ Ethics	2
	MATH-301	Mathematics-II	3
	BOTN-312	Systematic, Anatomy & Development /Lab	3 + 1
	ZOOI-322/323	Zoology-II / Lab	2 + 1
	CHEM-322	Biochemistry-II / Lab	2 + 1
Semester 03 Total Cr Hrs. 18	ENG-400	English -III	3
	ENG-400	Civilization	2
	MATH-400	Mathematics-III	3
	BOTN-410 / 411	Cell Biology, Genetics & Evolution /Lab	3 + 1
	ZOOI-420-421	Zoology-III / Lab	2 + 1
	CHEM-420 /421	Biochemistry-III /Lab	2 + 1
Semester 04 Total Cr Hrs. 18	ENG-401	English -IV	3
	ENG-401	Islamic Studies/ Ethics	2
	STAT-401	Statistics & Computer Skills	3
	BOTN-412 /413	Plant-Physiology & Ecology /Lab	3 + 1
	ZOOI-422 .423	Zoology-IV	2 + 1
	CHEM-422 /423	Biochemistry-IV	2 + 1
Semester 05 Total Cr Hrs. 18	BOT-500 / 501	Diversity of Non-Vascular Plants / Lab	2 + 1
	BOT-502 / 505	Diversity of Vascular Plants / Lab	2 + 1
	BOT-504 /505	Plant Breeding/Biometry / Lab	2 + 1
	BOT-506 /507	Plant Anatomy and Development/ Embryology / Lab	2 + 1
	BOT-508 /509	Genetics/Cytology	2 + 1
	BOT-510 / 511	Plant Systematics/Economic Botany	2 + 1
Sem este r 06 Total	BOT-512 /513	Mycology/Pathology /Lab	2 + 1
	BOT-514 / 515	Biodiversity/Conservation / Lab	2 + 1

	BOT-516 / 517	Biochemistry / Lab	2 + 1
	BOT-518 / 519	Ecology/Environment Biology / Lab	2 + 1
	BOT-520 / 521	Physiology/ Biotechnology / Lab	2 + 1
	BOT-522 / 523	Research Methodology / Lab	2 + 1

	Course No.	Course Titl	Credit Hours
Semester 07 Candidate shall opt any four offered subjects Total Cr Hrs. 12	BOT-600 / 601	Plant Taxonomy-I / Lab-I	2 + 1
	BOT-602 / 603	Plant Breeding/Soil Science-I / Lab- I	2 + 1
	BOT-604 / 605	Plant Ecology - I / Lab-I	2 + 1
	BOT-606 / 607	Plant Physiology -I / Lab-I	2 + 1
	BOT-608 / 609	Genetics-I / Lab - I	2 + 1
	BOT-610 / 611	Environment Biology-I / Lab - I	2 + 1
	BOT-612 / 613	Plant Biotechnology-I / Lab - I	2 + 1
	BOT-614 / 615	Mycology & Pathology-I / Lab - I	2 + 1
	BOT-616 / 617	Bioinformatics-I / Lab - I	2 + 1
Semester 08 Candidate shall opt any four offered subjects + Comprehensive V V Total Cr Hrs. 14	BOT-618 / 619	Plant Taxonomy -II	2 + 1
	BOT-620 / 621	Plant Breeding/Soil Science-II / Lab-II	2 + 1
	BOT-622 / 623	Plant Ecology Lab-II	2 + 1
	BOT-624 / 625	Plant Physiology -II / Lab-II	2 + 1
	BOT-626 / 627	Genetics-II / Lab-II	2 + 1
	BOT-628 / 629	Environment Biology-II / Lab-II	2 + 1
	BOT-630 / 631	Plant Biotechnology-II / Lab-II	2 + 1
	BOT-632 / 633	Mycology & Pathology-II / Lab-II	2 + 1
	BOT-634 / 635	Bioinformatics-II / Lab-II	2 + 1
	BOT-636	Comprehensive Viva-voce	2



### Program: M. Phil/MS Curriculum

Duration of M.Phil./ M.S. (2 Years, 4 Semesters)

Curriculum Course Requirement:

#### Semester 1

Courses	No.	Title of Course	Cr.CH	Marks
Core Courses	1	Research Methodology -I	3	100
	2	Lab. Techniques -I	3	100
Elective Courses Students have option to select 02 options of their choice.	1	Plant Biotechnology - I	3	100
	2	Genetics - I	3	100
	3	Biodiversity and Conservation	3	100
	4	Plant Omics	3	100

#### Semester 2

Courses	No.	Title of Course	Cr.CH	Marks
Core Courses	1	Research Methodology -II	3	100
	2	Lab. Techniques -II	3	100
Elective Courses Students have option to select 02 options of their choice.	1	Plant Biotechnology - II	3	100
	2	Genetics - II	3	100
	3	Advances in Plant Taxonomy	3	100
	4	Plant Microbe interactions	3	100

#### Credit Hours for Ph.D. Degree

	Credit Hours			Total Credit Hours
	1 <sup>st</sup> Semester	2 <sup>nd</sup> Semester	3 <sup>rd</sup> & 4 <sup>th</sup> Semester	
Core Courses	06	06	---	12
Elective Courses	06	06	---	12
Research Work/ Thesis	---	---	06	06
<b>Total Cr. Hours</b>	<b>12</b>	<b>12</b>	<b>06</b>	<b>30</b>



**Program: Ph.D. Curriculum**  
 Duration of PhD 3 Years  
 Curriculum Course Requirement

Semester 1

Courses	No.	Title of Course	Cr.CH	Marks
Core Courses	1	Research Methodology -I	3	100
	2	Lab. Techniques -I	3	100
Elective Courses Students have option to select 01 option of their choice.	1	Plant Biotechnology - I	3	100
	2	Genetics - I	3	100
	3	Population structure & dynamics	3	100
	4	Advanced Bioinformatics	3	100

Semester 2

Courses	No.	Title of Course	Cr.CH	Marks
Core Courses	1	Research Methodology -II	3	100
	2	Lab. Techniques -II	3	100
Elective Courses Students have option to select 01 option of their choice.	1	Plant Biotechnology - II	3	100
	2	Genetics - II	3	100
	3	Biosystematics	3	100
	4	Molecular and Plant Pathology	3	100

Credit Hours for Ph.D. Degree

Courses	1 <sup>st</sup> Semester	2 <sup>nd</sup> Semester	2 <sup>nd</sup> & 3 <sup>rd</sup> Year	Total Credit Hours
Core Courses	06	06	---	12
Elective Courses	03	03	---	06
Research Work/ Thesis	---	---	30	30
<b>Total Cr. Hours</b>	<b>09</b>	<b>09</b>	<b>24</b>	<b>48</b>

Current Number of students registered for the Degrees of M.Phil. & Ph.D.

	Number of students	Discipline
M.Phil. M.S.	73	Plant Physiology, Biodiversity & Conservation, Tissue Culture, Plant breeding & Soil Science, Mycology Pathology, Bioinformatics, Genetics, Pollination
Ph.D.	18	Tissue culture, Molecular Genetics & Plant breeding , Biodiversity Conservation, Plant Pathology, Bioinformatics

Standard: 2.1: The curriculum must be consistent and support the program's documented objectives.

### Courses versus program outcomes

Courses/Group of Courses	Objectives		
	1	2	3
1. Plant Mycology and Plant Pathology	The information about Mushrooms, Fungi, & their habitats.	To identify the plant disease & their control.	Medicinal usage of Fungi for the better health of Human being.
2. Plant Physiology and Biochemistry	The students acquired the knowledge of various physiological and biochemical phenomena operative in plants.	The students imparted with the knowledge of various physiological and biochemical pathways that lead to changes in plant growth and productivity.	The students learnt about the recent developments in the filed of physiology and biochemistry of plants.
3. Ecology and Environmental Biology	The students educated about ecological and environmental factors affecting the plant growth in ecological niches.	The students imparted with the knowledge of different plant ecological zones and ecosystems.	The students fostered with the recent developments in the filed of ecological and environmental sciences.
4. Taxonomy, Biodiversity and Plant Conservation.	The students learnt about the systems of nomenclature and their logical significance.	The students fostered about the importance and methods of conservation of economically important plants.	The students educated about the knowledge of threatening species, their distribution and conservation.
5. Plant Genetics , Biotechnology, Bioinformatics	The students acquainted with the knowledge of molecular biology of cell as a whole, organelles and genes, and modern tools used in bioinformatics.	The students imparted with the knowledge of molecular and related genetic studies including structure and functions of genes.	The students imparted about the recent developments in the filed of genomics and molecular biology.
6. Plant Breeding & Soil Science	The students enhance their knowledge regarding the development, multiplication of the plants.	The students become aware of relationship between the soil and plants.	The students acquire knowledge how various soil solutions play role for the development of the plant.



**Weaknesses:**

More field as well as laboratory work be encouraged including short courses on laboratory training, professional ethics and social impact of the Plant sciences need to be introduced.

**Strengths:**

The curriculum fulfills all basic requirements of program's objective.

The curriculum design, theoretical background within program's core material and requirements.

Program Learning Outcomes	Program Objectives				
	Skills in critical thinking, Program solving and communication	Initiate and manage change	Understand Professional ethics and responsibility	Employ I. S. Technology	Enable organization to make optimal decision
Students can be able to work individual as well as in team	x	x	x		x
Research oriented graduates	x		x		x
Self deterrent, and reliance Graduates		x	x		
The graduates produce to render their services in biodiversity & conservation	x	x	x		x
Capable to manage the renewable resources	x	x	x		x
Use up to date tools			x		
Life Long learning	x				
Professional ethics and responsibility	x		x		x

**Standard: 2.2.** Theoretical background, problems analysis and solution design must be stressed within the program's core material.

Theoretical background, problem analysis and solution of the courses.	
Elements	Courses
Theoretical background	BOTN310-11,BOTN312-13,BOTN 410-11,BOTN 412-13,BOTN 510-11,BOTN 506-07,BOTN 514-15,BOTN 518-19,BOTN 520-21,BOTN602-03,BOTN604-05,BOTN606-07,BOTN608-09, BOTN 612-13,BOTN 614-15,BOTN 616-17.
Problems analysis	BOTN310-11,BOTN312-13,BOTN 410-11,BOTN 412-13,BOTN 510-11,BOTN 506-07,BOTN 514-15,BOTN 518-19,BOTN 520-21,BOTN602-03,BOTN604-05,BOTN606-07,BOTN608-09, BOTN 612-13,BOTN 614-15,BOTN 616-17.
Solution design	BOTN600/01, BOTN602/3, BITN604/5, BITN606/7, BOTN608/9, BOTN612/13

**Standard: 2.3:** The curriculum must satisfy the core requirements for the program, as specified by the respective accreditation body. Examples of such requirements are given in Table A.1, Appendix A.

**Standard 2-4:** The curriculum must satisfy the major requirements for the program as specified by HEC, the respective accreditation body / councils. Examples of such requirements are given in Table A.1, Appendix A.

**Standard 2-5:** The curriculum must satisfy general education, arts, and professional and other discipline requirements for the program, as specified by the respective accreditation body / council. Examples of such requirements are given in Table A.1, Appendix A.

#### Minimum Requirements for Each Program

(Program Semester Credit Hours)

Program	Math & Basic Science	Engineering Topics	General Education	Others
B.S - 4 Years	138		20	
M.S - 2 years	24		0	
M. Phil - 2 years	24		0	
Ph.D - 4 years	18		0	

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

Has the IT program been included in the course: Yes  No.

Standard 2-7: Oral and written communication skills of the student must be developed and applied in the program.

Is there any oral/written communication skills have been included in the program:  
Yes  No.



## CRITERION 3: LABORATORIES AND COMPUTING FACILITIES

Standards: 3-1. Laboratories and computing facilities must be adequately available and accessible to faculty members and students to support teaching and research activities.

### Laboratory Facilities/Provision

At present, there is only two laboratories established in the department. However, there are two well established laboratories including glass houses and for *in vivo* & *in vitro* being used for experimental work.

Laboratory in the Department: one

#### Laboratory 1:

Courses being taught BS, MS, M.Phil & Ph.D.

Software available No

All major apparatus/equipments available Partly

Proper safety regulations No

Title: Location	Graduate & Post Graduate, Soil & Water Analysis Lab. Department of Botany
Subjects:	To study various subjects, for example Mycology, physiology, and ecology
Courses being taught	BOTN 603, 605, 607,
Major Apparatus/Equipments	pH/conductivity meter, centrifuge, analytical/top-loading balances, hotplate, water distillation unit, growth chamber
Non-functional Equipment	f lame photometer,
Safety Regulations	Observed accordingly

**Collaborative Laboratory 1:**

Courses being taught M.Phil. & Ph.D.

Software available Yes

All major apparatus/equipments available Yes

Proper safety regulations Yes

Location	Date Palm Research Institute (DPRI), SALU
Objectives	To study Plant genetics and Tissue Culture.
Courses being taught	BOTN 615, 617, 618
Major Apparatus/Equipments	DNA sequencer, growth chamber, Spectrophotometer, pH/conductivity meter, centrifuge, analytical/top-loading balances, chloride analyzer, freezer (0 and -20°C), hotplate, water still, autoclave, densitometer. PCR, Gel electrophoresis, Laminar flow, Mechanical shaker
Glasshouse/Greenhouse	For In vivo, <i>in vitro</i> experiments
Non-functional Equipment	All functioning
Safety Regulations	Observed accordingly

**Collaborative Laboratory 2:**

Courses being taught BS, M.Phil. & Ph.D.

Software available Yes

All major apparatus/equipments available Yes

Proper safety regulations Yes

Location	Centre for Biodiversity & Conservation SALU
Objectives	To study Taxonomy, Ecology
Course being taught	BOTN 514, 515
Major Apparatus/Equipments	Stereo microscope. Dissection microscope, Taxonomic reference material
Glasshouse/Greenhouse	For conservation, propagation
Non-functional Equipment	All functioning
Safety Regulations	Observed accordingly

Standard: 3/2 Laboratory manuals/ documentation instruction for experiments must be available and readily accessible to faculty and students.

(1) None (2) Available for students (3) Available for Faculty (4) Both ✓

Standard: 3/3

There must be adequate support personnel for instruction and maintaining the program. ✓  
YES

Standard: 3/4

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

NO computing facility in the department for the students.

**Weaknesses:**

- At least TWO well equipped/furnished laboratories be established one for BS.1-2 & 2<sup>nd</sup> for BS.3-4
- The department lacking some of the basic equipments/instruments.
- Need well trained technicians and equipment operators.
- Technicians may be required for long -term maintenance of equipments
- Some basic lab precautionary facilities like, fire extinguisher apparatus, Fire-Alarm in the building, and First Aid Facilities.
- No access Computer & Internet facilities for the undergraduate students. (Internet access to research students only )

**Strengths:**

- Lab manuals/instructions available and students have adequate access
- Each laboratory has laboratory attendant and assistant for support to students and faculty



## Criterion 4: STUDENT SUPPORT AND ADVISING

Students must have adequate support to complete the program in a timely manner and must have ample opportunity to interact with their-instructors and receive timely advice about program requirements and career alternatives.

**Standard: 4:1.** Courses must be offered with sufficient frequency and number for students to complete the program in timely manner.

### Classes/week of Major Courses offered in 4 -Year program.

Major Courses offered: BS. 4 Year Program, M.Sc. (Prev), & M.Phil/Ph.D.		
Course offered/Year	Classes/week	Practical/week
BS.I.1 <sup>st</sup> Semester	2	1
BS.I.2 <sup>nd</sup> Semester	2	1
BS. II. 1 <sup>st</sup> Semester	2	1
BS. II. 2 <sup>nd</sup> Semester	2	1
BS. III.1 <sup>st</sup> Semester	12	9
BS. III. 2 <sup>nd</sup> Semester	12	9
BS. IV. 1 <sup>st</sup> Semester	8	4
BS. IV. 2 <sup>nd</sup> Semester	8	4
M.Sc. (Prev) 1 <sup>st</sup> Semester	12	9
M.Sc. (Prv) 2 <sup>nd</sup> Semester	12	9
M.Sc. Final 1 <sup>st</sup> Semester	8	4
M.Sc. Final 2 <sup>nd</sup> Semester	8	4
M.Phil/Ph.D 1 <sup>st</sup> Semester	12	
M.Phil/Ph.D 2 <sup>nd</sup> Semester	12	
M.Phil/Ph.D 3 <sup>rd</sup> Semester	----	
M.Phil/Ph.D 4 <sup>th</sup> Semester	----	

- The above mentioned classes are strictly followed throughout the academic year. The core courses, optional can be easily completed under the favorable environment.

The core compulsory courses managed by the Botany department, however, other compulsory disciplines and optional subjects are managed by the related departments. The details of the compulsory subjects other than the offered by the Botany department are following.

4-Year BS: Program					
Subject:	Managed by:	Theory: CrHs/ Class.		Practical: CrHs/ Class.	
English	English Dept:	BS.I	1 <sup>st</sup> Semester	BS.I	1 <sup>st</sup> Semester
			4		--
			2 <sup>nd</sup> Semester		2 <sup>nd</sup> Semester
			3		--
		BS.II	1 <sup>st</sup> Semester	BS.II	1 <sup>st</sup> Semester
			4		--
			2 <sup>nd</sup> Semester		2 <sup>nd</sup> Semester
			3		
Bio Chemistry	Bio Chemistry Dept:	BS.I	1 <sup>st</sup> Semester	BS.I	1 <sup>st</sup> Semester
			4		3
			2 <sup>nd</sup> Semester		2 <sup>nd</sup> Semester
			3		3
		BS.II	1 <sup>st</sup> Semester	BS.II	1 <sup>st</sup> Semester
			4		3
			2 <sup>nd</sup> Semester		2 <sup>nd</sup> Semester
			2		3
Zoology	Zoology Dept:	BS.I	1 <sup>st</sup> Semester	BS.I	1 <sup>st</sup> Semester
			4		3
			2 <sup>nd</sup> Semester		2 <sup>nd</sup> Semester
			3		3
		BS.II	1 <sup>st</sup> Semester	BS.II	1 <sup>st</sup> Semester
			3		3
			2 <sup>nd</sup> Semester		2 <sup>nd</sup> Semester
			3		3
Mathematics	Mathematics Dept:	BS.I	1 <sup>st</sup> Semester	BS.I	1 <sup>st</sup> Semester
			3		--
			2 <sup>nd</sup> Semester		2 <sup>nd</sup> Semester
			3		--
		BS.II	1 <sup>st</sup> Semester	BS.II	1 <sup>st</sup> Semester
			3		--
			2 <sup>nd</sup> Semester		2 <sup>nd</sup> Semester
			4		--
Civilization	Archaeology Dept:	BS.I	1 <sup>st</sup> Semester	BS.I	1 <sup>st</sup> Semester
			2 <sup>nd</sup> Semester		2 <sup>nd</sup> Semester
			--		--
		BS.II	1 <sup>st</sup> Semester	BS.II	1 <sup>st</sup> Semester
			4		--
			2 <sup>nd</sup> Semester		2 <sup>nd</sup> Semester
			--		--

Islamic Studies	Optional Dept:	BS.I	1 <sup>st</sup> Semester	BS.I	1 <sup>st</sup> Semester
			--		--
			2 <sup>nd</sup> Semester		2 <sup>nd</sup> Semester
		BS.II	3	BS.II	--
			1 <sup>st</sup> Semester		1 <sup>st</sup> Semester
			--		--
Pak Studies	Optional Dept:	BS.I	2 <sup>nd</sup> Semester	BS.I	2 <sup>nd</sup> Semester
			--		--
			1 <sup>st</sup> Semester		1 <sup>st</sup> Semester
		BS.II	3	BS.II	--
			--		--
			2 <sup>nd</sup> Semester		2 <sup>nd</sup> Semester
Statistics & Computer Skill	Computer Dept:	BS.I	--	BS.I	--
			1 <sup>st</sup> Semester		1 <sup>st</sup> Semester
			2 <sup>nd</sup> Semester		2 <sup>nd</sup> Semester
		BS.II	--	BS.II	--
			1 <sup>st</sup> Semester		1 <sup>st</sup> Semester
			2 <sup>nd</sup> Semester		2 <sup>nd</sup> Semester
2	3				



Standard: 4:2. Courses in the major are must be structured to ensure effective interaction between students and faculty and teaching and teaching assistance?  
(1) Well structured ✓

Standard: 4:3. Guidance on how to complete the program must be available to all students and access to academic advising must be available to make course decisions and career choices.

Are students informed about program requirements?

(1) No (2) ✓ To some extent (3) Fully

Does there student advising system exist and how effective it is?

(1) ✓ No (2) To some extent (3) completely

Have students access to professional counseling?

(1) ✓ No (2) To some extent (3) Full

Do the students have interact with practitioners and to have membership in technical & professional societies?

(1) No (2) To some extent ✓ (3) Full

## CRITERION 5: PROCESS CONTROL

The processes by which major functions are delivered must be in place, controlled, periodically reviewed, evaluated and continuously improved. To meet this criterion a set of standards must be satisfied.

**Standard 5:1.** The process by which students are admitted to the program must be based on quantitative and qualitative criteria and clearly documented.

Program/credit transfer: NA

Transfer of a student from outside the university: NA

**Admission Criteria:** The admission policy is constituted by the "Admission Committee" consists of Deans, and senior faculty members of the university. The departments have no any role. The departments follow policy made by them which is also mentioned in "Prospectus of the university". However, the admission criteria are evaluated but not regularly.

**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:

How frequently admission criteria are evaluated?

(1) None      (2) Not regularly ✓      (3) Every Year

Are the evaluated results used to improve the results?

(1) No      (2) To some extent      (3) Yes ✓

Is there any policy regarding program /credit transfer?

(1) No      (2) To some extent      (3) Well defined ✓

Is there any mechanism of student's registration in the program?

(1) No      (2) To some extent      (3) Well defined ✓

How frequently process of registration is monitored?

(1) None      (2) within 1 year      (3) After 1 year      (4) When needed ✓

Are the evaluation results used to improve the results?

(1) No                      2) To some extent                      (3) Yes✓

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.

- Shah Abdul Latif University strictly follows the policy of "Equal Opportunity" regardless religion, race, faith, cast & creed, gender regarding recruiting faculty including admissions, educational programs and employment.
- The University applies standard operating methodology for evaluation, such as Annual Confidential Report (ACR), required research papers, teaching experience and all other conditions as directed by the HEC. Thus This process ensures the objectives of the program mission.

Standard 5:4: The process and procedures used to ensure that teaching and delivery of course material to the students emphasizes active learning and that course learning outcomes are met. The process must be periodically evaluated to ensure that it is meeting its objectives.

- It is strictly observed that the time table is followed by the faculty. However, Weaknesses & Strengths have been observed through the student feedback for the "Course Evaluation". The department needs to improve in various aspects.

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 process for the degrees of M.Phil/Ph.D. has been well designed by the Board of Advanced Studies & Research (BASR) followed by the HEC directions. Details are as under.

Degree	GPA/Class/GRE	Interview
BS-4 Year/M.Sc.	Pre-Admission Test (NTS) style	X
M.Phil.	Subject GRE	✓
Ph.D.	Subject GRE & GPA more > 3.0	✓



This process must be periodically evaluated to ensure that it is meeting its objectives. ✓  
(Yes)

The department ensures that the graduates actively participate in laboratory work, punctual in the classes, maintaining attendance over 75%.

### Assessment of Teacher Evaluation. (Filled by the student)

(A: Strongly Agree, B: Agree, C: Uncertain, D: Disagree, E: Strongly Disagree :)

Did the Instructors demonstrate knowledge of the subject?

➤ 85% (✓A) 10% (✓B) 5% (✓C).

Did the Instructors complete the whole course?

➤ 65% (✓A) 20% (✓B) 10% (✓D) 5% (✓E)

The Instructor shows respect towards students and encourages class participation.

➤ 90% (✓A) 10% (✓B).

The Instructor arrives on time.

➤ 80% (✓A) 5% (✓B) 15% (✓D).

The Instructor leaves on time.

➤ 85% (✓A) 5% (✓B) 10% (✓C).

The Instructor is fair in examination.

➤ 85% (✓A) 10% (✓B) 5% (✓C).

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

➤ 65% (✓A) 5% (✓B) 10% (✓C) 10% (✓D) 10% (✓E).

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

➤ 85% (✓A) 10% (✓B) 5% (✓C).

The assignments and exams covered the materials presented in the course.

➤ 80% (✓A) 10% (✓B) 10% (✓C).

## Research student progress reviews

The Proforma regarding research student progress reviews has been filled by the research students enrolled mostly for the Degree of M.Phil. The following Weaknesses, Strengths and General Comments have been observed:

### Weakness:

- The approved tenure/period for the completion of the course and research work for the degree of M. Phil has been extremely exceeded.
- Very less facility of laboratory within the department.
- No computer facility.

### Strengths:

- Full cooperation of the faculty members.
- Easy access to all equipments including sophisticated in the collaborative laboratories such as DPRI and CBC.
- Sufficient research material, guidance and time given by the faculty members.

### General Comments:

- They have very concerned regarding the timely completion of the course as well as research work.
- There must be computer facility connected with internet..

## CRITERION: 6. FACULTY

Faculty members must be current and active in their discipline and have the necessary technical depth and breadth to support the program. There must be enough faculty members to provide continuity and stability, to cover the curriculum adequately and effectively. To meet this criterion the following standards must be satisfied.

**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 interest of all faculty members must be sufficient to teach all courses, plan, modify and update courses. The majority must hold a Ph.D. degree in the discipline.

**Table: 10. Program areas and number of faculty in each area.**

Program Areas of specialization	Courses in the area.	Number of faculty members in each area	Number of faculty with Ph.D. degree
1. Mycology & Plant Pathology , Bioinformatics	BOTN: 506,507	1	1
2. Plant Physiology	BOTN:412,413,520,521,606,607	2	1
3. Ecology and Environmental Biology	BOTN: ,413,518,519, 604,605,610,611	2	1
4. Taxonomy, Plant Biodiversity & Conservation	BOTN:BOTN:310,311,312,323	2	1
5. Plant Genetics, & Biotechnology	BOTN:412,413,518,519,604,605,610,611	2	2
6. Plant Breeding & Soil Science	BOTN:602,603	1	1



## Faculty Resume

Note: Faculty resumes are well documented as per policy/criteria of HEC.

Names of the faculty members and field of specialization are as under.

Name:	Position	Qualification	Field of specialization
Dr. Mumtaz Ali Saand	Associate Professor	Ph.D.	Mycology/Plant Pathology, Bioinformatics
Dr. Muzafar Hussain Sirohi	Associate Professor	Ph.D.	Biodiversity and Conservation, Taxonomy,
Dr. Ameer Ahmed Mirbahar	Associate Professor	Ph.D.	Biotechnology, Molecular Biology
Dr. Tahira Jatt	Assistant Professor	Ph.D.	Plant Genetics, Cell biology
Dr. Fozia Khan Siyal	Assistant Professor	Ph.D.	Plant Physiology, Phycology
Ms Naeema Khatoon	Teaching Assistant	M.Phil.	Plant Ecology/Taxonomy
Mr Amjad Ali Maitlo	Teaching Assistant	M.Sc.	Ecology, Bioinformatics
Mr. Nazik Ali Jakhrani	Teaching Assistant	M.Sc.	Mycology, Pathology

**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 Survey

Are all faculty members current in their disciplines?

(a) Up to 20 % (b) Up to 50% (c) Up to 75% (d)  Over 75%

Is there sufficient time for faculty members for scholarly activities and professional development?

(a) No (b) To some extent (c)  Full

- Participation in seminars, conferences at National/International levels.
- Research proposals for funding and linkage with other Institutions.
- Taking classes, involved in research and reading new books in the relevant field.

- Publications in HEC recognized journals or journals having impact factors.
- Organize workshops, seminars and conferences.
- The department arranges lectures from eminent scholars on various topics of the subject for its students and faculty at National level.
- Prepare their resume in line with HEC guidelines.

Faculty Development Program: NA.

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

The following criteria are under practice in order to satisfy the faculty members in their profession.

- Fair, timely selection, appointment / promotion as per HEC policy.
- Providing Tenure Track salary package
- Excellent working environment.

The following information has been collected through the Proforma from the faculty members: The data is shown as percentage:

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

Your mix of research, teaching and community service.

- A: 16%, B: 84%

The intellectual stimulation of your work.

- A: 16%, B: 84%

Type of teaching / research you currently do.

- A: 66.67, B: 33.33%

Your interaction with students.

- A: 84%, B: 16%

Cooperation you receive from colleagues.

- B: 84%, C: 16%

The mentoring available to you:

- B: 66.66% , D: 16.66%, C: 16.66%

Administrative support from the department.

- A: 16%, B: 84%

Providing clarity about the faculty promotion process.

- B: 66.66% , D: 16.66%, C: 16.66%

Your prospects for advancement and progress through ranks.

- A: 16%, B: 84%

Salary and compensation package.

- A: 33.33% B: 66.66%

Job security and stability at the department.

- A: 33.33%, B: 50%, C: 16.66%

Amount of time you have for yourself and family.

- B: 84%, D: 16%

The overall climate at the department.

- B: 84%, C: 16%

Whether the department is utilizing your experience and knowledge.

- A: 16.66%, B: 66.66%, C: 16.66%

What are the best programs / factors currently available in your department that enhance your motivation and job satisfaction:

#### General Comments:

- Teachers have expressed their views that seminars, symposiums and conferences, in general, have motivated to impart the new techniques and methods of teaching.
- Suggest programs / factors that could improve your motivation and job satisfaction?
- More faculty members may be appointed on the regular basis or contract to cover the workload as per HEC policy.

#### Assessment of Teacher Evaluation. (Filled by the student)

(A: Strongly Agree, B: Agree, C: Uncertain, D: Disagree, E: Strongly Disagree :)



Did the Instructors demonstrate knowledge of the subject?

85% (√A) 10% (√B) 5% (√C).

Did the Instructors complete the whole course?

65% (√B) 20% (√B) 10% (√D) 5% (√E)

The Instructor shows respect towards students and encourages class participation.

90% (√A) 10% (√B).

The Instructor arrives on time.

80% (√A) 5% (√B) 15% (√D).

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The Instructor is fair in examination.

85% (√A) 10% (√B) 5% (√C).

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

65% (√A) 5% (√B) 10% (√C) 10% (√D) 8510% (√E).

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

85% (√A) 10% (√B) 5% (√C).

The assignments and exams covered the materials presented in the course.

80% (√A) 10% (√B) 10% (√C).

## CRITERION: 7. INSTITUTIONAL FACILITIES

Institutional facilities, including library, clean rooms and offices must be adequate to support the objectives of the program. To satisfy this criterion, the following standards must be met.

**Standard 7:1.** The Institution must have the infrastructure to support new trends in learning such as E-learning.

**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.

**Standard 7:3.** Class rooms must be adequately equipped and offices must be adequate to enable faculty to carry out their responsibility.

Details of facilities available in the department:

Item	Position	Remarks
Seminar Library & Books/Journals	√ Yes. Good number of books available.	Needs more books including research journals
Computing Laboratory	X	At least 1 Computing needed for research scholars.
Laboratory	1, but incomplete. Others are at the DPR1 & B & C Center.	2 well equipped need.
Greenhouse/ Glasshouse	√ Yes	---
Class Rooms	Sufficient number of classes are available	Need to be equipped with Multimedia, internet facility
Girls Common Room	√ Yes	Not spacious, needed one big with complete facility of washroom/dressing room.
Boys Common Room	X	Needed
Faculty offices	√ Yes	Sufficient
Internet & Digital Library Facility	X	1 room needed with complete facility of internet.
Computers	Only for faculty members	The same facility needed for the research scholars & Postgraduate students.

## CRITERION: 8. INSTITUTIONAL SUPPORT

The institution's support and the financial resources for the program must be sufficient to provide an environment in which the program can achieve its objectives and retain its strength.

**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 teacher and scholars.

The department has 1 incomplete laboratory facility; however, there are 2 more collaborative laboratories (Biodiversity & Conservation Center and Date Palm Research Institute (DPRI)). There are qualified faculty members who provide facility for all faculty and students to maintain competence. The expenses for regular purchase of chemicals, glass wares are born by the university, while the funds are very limited that to be enhanced. The major financial source is the University which allocates budget for the department and the University is HEC.

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

Number of student enrolment during last three years and student faculty ratio

Program	Enrollment Year 2019	Students/ Faculty Ratio	Enrollment Year 2020	Students/ Faculty Ratio	Enrollment Year 2021	Students/ Faculty Ratio	Enrollment Year 2022	Students/ Faculty Ratio
BS 4Yr	79	11.3:1	75	10.7:1	70	11.6:1	82	16.4:1
M.Sc.	39	5.6:1	44	6.3:1	05	0.8:1	06	1.2 : 1
M.Phil./MS	19	2.7:1	26	3.7:1	28	4.7:1	----	----
Ph.D.	07	1:1	05	0.7:1	06	1:1	-----	----



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

- The University provides resources to maintain library & laboratories.

Does the department provide opportunities to the faculty members to attend international / national conferences?

- (1) No      (2) To some extent      (3) Full ✓

### Survey of Department Offering M.Phil./Ph.D. Programs:

Date of initiation M. Phil/Ph.D. program. 2006/2000

Are there relevant academic journals subscribed in area relevant to M.Phil/Ph.D.

- Yes, Pakistan Journal of Botany

Number of computers available to all students. None

Is there internet facility available for the students in the department?

- NO

How many faculty members are approved by the HEC?

- 05

How many of research articles published in last 3 year.

- 26

Number of M.Phil/ Ph.D. currently enrolled in the department.

- 18 based on both class/research.

Number of International examiner to which the Ph.D. dissertation has been sent.

- 2

PT Members	
(1) Dr Fozia Khan	Signature
(2) Dr Tahira Jatt	Signature
(3) Dr Muzafar Hussain Sirohi	Signature

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a  
28  
28-02-2022

Chairperson's Comments

SAR is found complete and up-dated

Name and Signature

Dr. Munir Ali Saad

na  
Department of BOTANICAL  
Shah Abdul Latif University,  
KHARPUR