



# PROSPECTUS

## SCHOOL OF BIOLOGICAL SCIENCES



**SCHOOL OF BIOLOGICAL SCIENCES**  
University of the Punjab, Quaid-i-Azam Campus, Lahore-Pakistan



# SCHOOL OF BIOLOGICAL SCIENCES







*In the*

*Name of*

*Allah*

*Most*

*Compassionate*

*Ever*

*Merciful*

## Contents

Mission Statement _____	01
Message from Vice Chancellor _____	02
Message from the Director General _____	03
Academic Faculty _____	04
Scientific & Technical Staff _____	07
Accounts & Administrative Staff _____	08
Introduction _____	09
Admission Criteria _____	11
Infrastructure and Facilities _____	15



### School of Biological Sciences

University of the Punjab, Quaid-i-Azam Campus,  
Lahore 54590 Pakistan. Tel: +92-42-99230960

Email: [info.sbs@pu.edu.pk](mailto:info.sbs@pu.edu.pk)

Web: <http://pu.edu.pk/home/department/59/School-of-Biological-Sciences>



Our  
aim is to make  
School of Biological  
Sciences a leading research  
institute with a stellar reputation.  
We nurture our students with  
intellectual and personal  
development by providing them  
with supportive and  
independent research  
environment.



## From the Vice Chancellor

The School of Biological Sciences University of the Punjab, Lahore, was established in 2002 with the 'prime mandate' to impart quality education/research guidance of international standard to MPhil and PhD students in the broader domain of biological sciences. To achieve this goal, SBS has developed infrastructure which is at par with international standards and has emerged as a focal point for research activities in the realm of modern day biology. Human resource development is another cornerstone of the objectives of the SBS. The School is thus engaged in providing quality education and research environment not only to its own students but also to students from other Life Sciences Departments/Institutes of the University, as well as, of the country. The School has progressed to its present level of excellence due to the hard work of the faculty members having a track record of high standard international research and academic credentials.

The achievements of the School, as acknowledged at various forums, both in terms of quality and quantity of research, reflect the dedication of its faculty and students in achieving the objectives of the establishment of the School. As Chairman of BOGs of SBS and Vice-Chancellor of the University it is heartening to see this institute blossom.

**Prof. Dr. Niaz Ahmad Akhtar**



## From the **Founding Director General**

Since its inception 15 years ago, School of Biological Sciences has established itself to be a successful institution for research education at PhD level. There is no doubt that most research themes of our PhD students reflect the contemporary trend in biological sciences. All the students admitted in SBS are awarded a scholarship.

The faculty of SBS has seized the opportunities, of well-equipped laboratories, offered by SBS and have established successful research groups. The future success of SBS depends on how active the faculty is in the laboratory, prepared to work with their research students for long hours, share with them the frustration of frequent failure in the hope of a few rewarding moments. This is the traditional way in which scientific techniques and culture is passed on from one generation to the other. The hope is that in SBS this tradition will be followed.

**Muhammad Akhtar**

*FRS*



**Muhammad Akhtar, PhD, FRS,**

**Founding Director General**

*Research Interests:*

*Biochemistry Stereochemistry,*

*Enzymology and Protein*



**Javed Iqbal, PhD**

**Professor Emeritus**

*Research Interests:*

*Radiation Botany, Plant Morphogenesis,*

*Biotechnology, Molecular markers of*

*growth, Differentiation & Disease*



**Abdul Rauf Shakoori, PhD**

**Professor Emeritus**

*Research Interests:*

*Cell Biology, Molecular Biology,*

*Gene Expression and*

*Biochemical Toxicology, Environmental*

*Biotechnology, Biopesticides*



**Muhammad Waheed Akhtar, PhD**

**Professor Emeritus**

*Research Interests:*

*Proteomics, Biochemistry, Enzymes,*

*Gene Expression, Genetic Biomarkers*

*and Protein Biomarkers*





**Naeem Rashid, PhD**

**Professor / Acting Director General**

*Research Interests:*

*Thermophilic Microorganism and  
their Thermostable Products, Plant  
Microbe interaction*



**Sadaf Naz, PhD**

**Associate Professor**

*Research Interests:*

*Human Molecular Genetics,  
Genetic Disorders annotated with  
hearing*



**Qamar Bashir, PhD**

**Assistant Professor**

*Research Interests:*

*Biochemistry, Protein Chemistry,  
Enzymology, Molecular Biology  
and Structure Biology*



**Qurra-tul-Ann Afza Gardner, PhD**

**Assistant Professor**

*Research Interests:*

*Biological Mass Spectrometry,  
Insulin and Proinsulin Production,  
Enzymology, Amyloidosis and Fibrillation*



**Naveed Shahzad , PhD**

**Assistant Professor**

*Research Interests:*

*Tumor Virology, Oncology, Microbiology,  
Cell and Molecular Biology*



**Uzma Qaisar , PhD**

**Assistant Professor**

*Research Interests:*

*Plant Molecular Biology, Cotton Fiber  
Transcriptional Dynamics, Bioinformatics,  
Plant Pathology, Bacteriology and  
Microbial Genetics*



**Asima Tayyab , PhD**

**Assistant Professor**

*Research Interests:*

*Stem Cell Biology, Regenerative  
Medicine with Stem Cells Therapies,  
Skin Burn Wound Healing,  
Fibrosis-Mechanism and Repair of  
Kidney, Liver and Skin*



**Naseer Ahmad , PhD**

**Assistant Professor**

*Research Interests:*

*Food Enzymology (synthesis and  
application of enzymes in food processing),  
Food Biotechnology, Probiotics and Prebiotics,  
Functional Foods, Nutraceuticals*



**Soumble Zulfiqar, PhD**

**Assistant Professor**

*Research Interests:*

*Molecular Biology, Microbiology, Metal resistance  
mechanisms in prokaryotes and protozoans,  
Genetic profiling at transcriptional and translational level*



**Dr. Saima Iftikhar**

*Senior Experimental Officer*



**Dr. Munir Ahmad**

*Senior Experimental Officer*



**Dr. Muhammad Ali**

*Senior Research Officer*



**Rauf Ahmad**

*Chief Technician*



**Qadeer Ahmad**

*Computer Lab Coordinator*

SCIENTIFIC  
AND  
TECHNICAL  
STAFF

ACCOUNTS  
&  
ADMINISTRATIVE  
STAFF



**Muhammad Abid**

*Deputy Director Accounts &  
Administration*



**Shakeel Ahmad Babar**

*Senior Librarian*



**Gul Nayyab**

*Procurement Officer*



**Muhammad Irfan**

*Private Secretary to DG*



**Rana Muhammad Zahid Islam**

*Senior Stenographer*



# Introduction

Establishment of the School of Biological Sciences at the University of the Punjab, Lahore, Pakistan was conceptualized in 2002. Coincidentally around the same time Dr Muhammad Akhtar, then the only FRS of Pakistani origin, had retired from Southampton University, UK, after an illustrious career. Mr. Akhtar Saeed, then Education Minister, Government of the Punjab, took an unprecedented personal initiative to pursue Dr. Akhtar to come to Lahore and contribute to a national cause. Thus started the Punjab Government-Punjab University joint project for the establishment of the School of Biological Sciences, subsequently approved by the University of the Punjab Syndicate, as a part of the university, within the provisions of the University of the Punjab.



The principal objective of the School was to generate high quality work force in the wider range of biological sciences. Qualitative and quantitative achievements of high merit, made during the 15 years of existence of the School, bear testimony of the potential it has displayed.



The number of scholars graduating from the School of Biological Sciences during the 15 years has been 75 Ph.Ds and 77 M.Phils.

In addition to the School of Biological Sciences regular students, several visiting scholars from various national institutions/organizations also worked under the supervision of the school's faculty for different degrees and their experimental work.

The number of visiting scholars from various national academic and R&D institutions graduating for various degrees who have worked in School of Biological Sciences is 505



## INTRODUCTION

## SCHOOL OF BIOLOGICAL SCIENCES

## INTRODUCTION

SCHOOL  
OF  
BIOLOGICAL  
SCIENCES

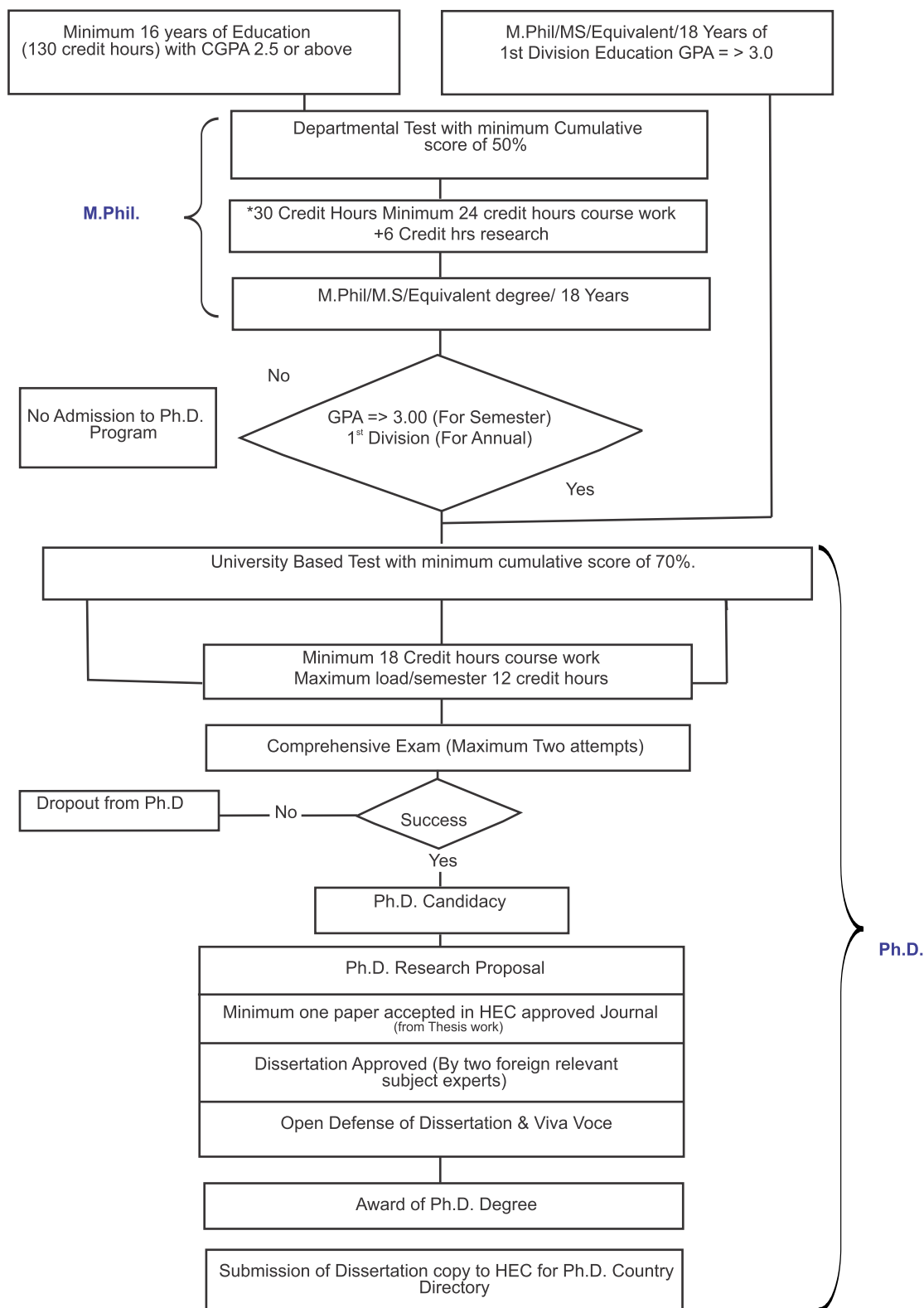
All scholars graduating with PhD degrees, whether as regular scholars of the School or visiting scholars working under the supervision of the faculty of the School are professionally active in their post-doctorate employment capacities.

Publications and patents, regarded as a tangible measure of research activity, as done by those associated with the School were:

- (I) 542 research papers published in impact factor journals;
- (ii) 38 authored books, edited books, and book chapters;
- (iii); 48 publications in scientific proceedings;
- (iv) 138 research papers published in national journals;
- (v) five patents obtained from the Pakistan/US Patents Authorities;
- (vi) Research presentations and participation in conferences and seminars are significant contributors to the interaction among researchers for expanding their horizons of research frontiers and portfolios, in which domain the participation of those associated with the School of Biological Sciences included:
- (vii) 86 invited lectures/plenary talks presented by the academic faculty at various international and national conferences, seminars, and institutions;
- (viii) The school organizes two training courses on regular basis. One on “Recombinant DNA Technology” in spring and the other on “Recombinant Protein Production & Purification” in autumn every year.



## FLOW DIAGRAM FOR MINIMUM QUALITY CRITERIA

ADMISSION  
CRITERIA

## Principal Research Areas

School of Biological Sciences as part of Faculty of Life Sciences seeks to generate knowledge in the following core areas.

- **Biochemistry**
- **Proteomics**
- **Enzymology**
- **Microbiology**
- **Plant Sciences**
- **Molecular Biology**
- **Cell Biology**

## Academic Programs

School of Biological Sciences offers only Post Graduate Programs (M.Phil and Ph.D).

## Admission Requirement

### Minimum Quality Criteria for Admission/Completion

The School of Biological Sciences strictly follows the “Minimum Quality Criteria for M.Phil/ Ph.D Programs”, as outlined by the HEC.

#### I. M.Phil Program

I. Students are admitted to M.Phil and Ph.D program strictly on merit, as determined by the cumulative score in a written test and the score obtained in an interview conducted by a Selection Board comprising several technical experts, also giving consideration to past research experience and publications;

ii. Minimum eligibility criteria for admission is 16 years of schooling to M.Phil./130 Credit Hours, with CGPA 2.5 or above.

iii. Students are required to complete course work of 24 Credit Hours, and thesis research work of 6 Credit Hours;

iv. On completion of the mandatory course work and research thesis, the students are awarded M.Phil degree.



#### II. Ph.D Program

i. Minimum eligibility criteria for admission to Ph.D program is M.Phil/ MS degree, having qualified with GPA > 3.0 (Semester System), or 1<sup>st</sup> Division (Annual System);

ii. The School of Biological Sciences also requires candidates for admission to the Ph.D program to qualify the school's “Comprehensive Test” at the minimum score of 60%.

iii. The School of Biological Sciences additionally prefers that its Ph.D students



qualify the International GRE with a minimum of 50 percentile points before they may be allotted research topic for writing the thesis synopsis;

iv. All M.Phil/Ph.D scholars are required to present a seminar in the “Journal Club”, at least once a year, on an assigned research paper published in a high quality journal, and their participatory attendance in all its meetings is mandatory;

v. Candidates are required to complete course work of 18 Credit Hours, qualify PhD Candidacy, write a PhD Research Proposal, publish or get acceptance of at least one research paper in HEC approved journal;

vi. On completing the above mandatory requirements, the candidate may proceed with writing, submitting, and defending the Ph.D thesis.



## Courses of Study

### I. M.Phil Degree

- i. SBS 501 Biochemistry-I  
2 Credit Hours
- ii. SBS 502 Biochemistry-II  
3 Credit Hours
- iii. SBS 503 Cell Biology-I  
3 Credit Hours
- iv. SBS 504 Cell Biology-II  
1 Credit Hour
- v. SBS 505 Molecular Biology  
3 Credit Hours
- vi. SBS 506 General and Medical Genetics  
3 Credit Hours
- vii. SBS 507 Virology  
1 Credit Hour
- viii. SBS 508 Analytical and Mechanistic Enzymology  
2 Credit Hours
- ix. SBS 509 Protein Chemistry and Enzymology (Preparative Enzymology)  
3 Credit Hours
- x. SBS 510 Molecular Biology Lab-work  
3 Credit Hours
- xi. Thesis Research Work  
6 Credit Hours

### II. PhD Degree Compulsory Courses

- i. SBS 701 Frontiers in Molecular Biology (Journal Club)  
2 Credit Hours

## ADMISSION CRITERIA

- ii. SBS 702 Signal Transduction  
2 Credit Hours
- iii. SBS 703 Cloning Module (Recombinant DNA Technology)  
2 Credit Hours
- iv. SBS 704 DNA-Protein Module 2 Credit Hours
- v. SBS 705 Protein Structure Module  
2 Credit Hours
- vi. SBS 706 Analytical Techniques  
3 Credit Hours

### Optional Courses

- i. SBS 707 Bioinformatics  
2 Credit Hours
- ii. SBS 708 Immunology  
3 Credit Hours
- iii. SBS 709 Term paper  
2 Credit Hours
- iv. SBS 710 Scientific Writing 2 Credit Hours
- v. SBS 711 Forensic DNA Typing 2 Credit Hours
- vi. SBS 712 Forensic Toxicology 3 Credit Hours
- vii. SBS 713 Forensic Microbiology and Entomology 3 Credit Hours
- viii. Thesis Research Work

## Infrastructure and Facilities Available

The School of Biological Sciences is housed in three separate blocks, well linked, each comprising a ground floor and a first floor, each floor having covered / constructed area of 8,200 sq ft, with total covered/constructed area of 48,996 sq ft of the six floors of the three blocks.



This meets the laboratory space requirement of 54,000 sq ft originally indicated by Dr. Muhammad Akhtar to be necessary for functioning of the School of Biological Sciences during the first BOGs meeting on June 22, 2002.



## ADMISSION CRITERIA



Block-I houses 11 general purpose research laboratories for working of PhD scholars. These laboratories are well equipped with the necessary equipment/instrumentation. To mention a few of these are: high/medium speed centrifuges,



microfuges, refrigerated/non-refrigerated incubator-shakers, laminar-flow clean benches, freeze dryer/ultra-low temperature freezers, fume-hoods, biolistic particle delivery system, PCR/real-time PCR, refrigerated/room temperature incubators/ovens, DNA sequencer, CD/UV/Vis spectrometers, miscellaneous electrophoresis power supplies,

2-D gel electrophoresis unit, concentrator, microplate reader-washer, sonicator, pHmeters, and microbalances.



Block-II also has 11 general purpose laboratories for research work of PhD students and faculty of the School of Biological Sciences. Beside several of the equipment housed in the general purpose laboratories in Block-I, the Block-II general purpose laboratories house fermentors, atomic absorption spectrophotometer, and liquid scintillation counter.



Besides the general purpose laboratories in Block-II, there are several specific-purpose designated laboratories, which are all well-equipped with state of the

## INFRASTRUCTURE

### AND

### FACILITIES



art facilities. Included among these specific-purpose designated laboratories are mass spectrometry laboratory, chromatography laboratory, DNA laboratory, plant growth chamber, biotechnology laboratory (enzymes/solid-state fermentation for power alcohol-gasohol production), animal cell culture laboratory, and insectory.



The School of Biological Sciences houses a fully-air conditioned sectional reference-automated library, which has accession of 2,400 latest books, and subscribes to four online, one international print journal and ten national print journals. PhD scholars and the faculty have



access to two photocopying machines for free photocopying, and seven computers with 24-hour internet access are available.



The School of Biological Sciences has two auditoriums one with 100 and the other with 150 sitting capacity. Both have latest projection facilities.







### Financial Support (Stipend)

In addition to a monthly stipend students who have been admitted to M.Phil / Ph.D program, GRE fee (Pass Candidates only), is also paid by the school.



### Accommodation:

School of Biological Sciences has built two hostels – Prof. M. Akhtar Hall for male students and another Hall for female students to fulfill the accommodation needs of our M.Phil. and Ph.D. students.



### Transportation

School of Biological Sciences provides students with a daily commute transportation facility from hostels to laboratories that ensures efficient use of student's time.



### Co-Curricular Activities

Excursion/Study Tours provide students with the environment conducive for enhancing their skills as researchers.



National and international participation in congresses are arranged for students to broaden their vision for future research and endeavors.



INFRASTRUCTURE

AND

FACILITIES



## Journal Club:

A journal club meeting is held every week. Eminent scientists from various biological sciences disciplines present their current research that helps our students broaden their research vision.



Journal Club also conducts workshops/seminars and organizes conferences.



## Sports:

Healthy minds represent healthy society. School organizes various sports events where students can boost their physical fitness. The most popular sports event is our Annual Sports Gala. All the

students actively participate in various games.



## Alumni:

Our graduates have made a real impact in science not only at national levels but also at international level. Our graduates are serving various organizations and universities in Pakistan and abroad.



Facilities, supply and maintenance are efficiently managed by trained staff, which include Rauf Ahmad (Chief Technician), Muhammad Abid (Deputy Director), Gul Nayyab (Procurement Officer), Shakeel Ahmad Babar (Senior Librarian), Muhammad Irfan (PS to the D G), Rana M Zahid Islam (Senior Stanographer), Qadeer Ahmad (Computer Lab Coordinator), Maqsood Ali (Inventory Keeper of Chemicals) and Muhammad Adil (Inventory Keeper of Enzymes)



**First Batch of Students  
Once Students-----Now Professionals  
2003**





Department of Press & Publications