



# WOMEN UNIVERSITY SWABI

KHYBER PAKHTUNKHWA-PAKISTAN

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## Department of Biochemistry

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### Vice Chancellor's Message

Welcome to Women University Swabi, a university that is committed to empower women through higher education and provide them opportunities to work in a wide array of settings such as education, business, industry, health, and social services sectors.

To me, the job of a university is not only to produce degree holders and commercially marketable human resources, but I believe it is more than that. Universities are required to produce loyal, honest and enlightened human beings who can empathetically understand the needs of society, reverentially work in both national and international community, and take better care of the future generations.

**PROF. DR. SHAHANA UROOJ KAZMI**  
**WOMEN UNIVERSITY SWABI**  
KHYBER PAKHTUNKHWA-PAKISTAN



# Department of Biochemistry

## Vision

To be an exemplary Department in the region that excels in scientific innovation, societal relevance, and quality education while keeping strict ethical standards and pursuing a sustainable future. The Department of Biochemistry is dedicated to create a diverse, flourishing intellectual learning community among its instructors, staff, and students. In order to develop excellent instructors and the next generation of leaders in the scientific and medical communities, we want to encourage excellence in the classroom from the perspectives of both teaching and learning. Through faculty-student research collaborations, we aim to promote scientific investigations. The Department of Biochemistry is passionate about fostering and strengthening the relationship between academia and the biochemical industry sectors thereby giving students access to professional prospects.

## Mission

Advancing the understanding of the living world and improving the quality of life through improved health care, disease prevention strategies, nutrition, and environmentally friendly and sustainable farming and manufacturing practices. To give students chances to engage in real, difficult practical learning activities utilizing cutting-edge scientific methods and innovative technologies.

# BS

## Bachelor of Science in Biochemistry

## **About Us**

Women University Swabi started the Department of Biochemistry in 2021. The Department of Biochemistry is committed to provide a fundamental understanding of various biological processes at molecular level. Currently, the Department offers a four-year honors bachelor degree program. The Department of Biochemistry is dedicated to provide access to the state-of-the-art undergraduate and graduate education, research and seeks to broaden the scope of its study in cellular biochemistry in humans, animals, plants, and microorganisms. We aim to develop top-notch Biochemistry educational programs geared at giving students competitive, transferable skills, more relevant to achieving their career goals.

The Department of Biochemistry is dedicated to engage the students in a program of instructions that prioritizes critical thinking, rigorous and effective application of the scientific method, quantitative analysis, basic chemical, biological, and physical principles, clear and accurate written and verbal communication, and intensive hands on experimental learning activities. We are intended to offer research training and facilities in various Biochemical and Molecular Biology areas, including Human Molecular Genetics, Functional Analyses, Molecular Cloning and Protein Purification, Microbiome profiling, Computational Chemistry, Microbiology, Enzymology and Clinical Biochemistry.

## **Career and Job Opportunities in Biochemistry**

The graduates can work in the following areas

- Medical Diagnostics/Hospitals/Labs
- Academia/teaching institutes
- Research institutes
- Drug Companies
- Pharmacy Assistant
- Forensic Science Department

## **Why to Choose Biochemistry as a Career**

Biochemistry is the science of chemical reactions occurring in the living organisms that also helps you to understand your own system which in turn provide you the opportunity to understand your own inner self for maintaining the better health. Biochemistry is also a path to better future which enables you to work in diverse areas thereby helping the living creatures on this earth. Also, as a biochemist you can work in Biopharmaceutical industries where you help to device and guide doctors towards better prescription. As a biochemist you can play an important role in the pandemics by working effectively in medical diagnostics.

## **Future Plans**

We have planned to launch Associate degree programs in addition to BS at the Department of Biochemistry.

We have planned to offer M.Phil and PhD degree programs at the Department of Biochemistry, but currently, we are not offering M.Phil and PhD programs.

The department is intended to establish the state-of-the-art Laboratories in various disciplines of the Biochemistry, such as Clinical Biochemistry, Molecular Biology and Structural Biochemistry.

## **Admission Criteria**

At least 45% marks or 2<sup>nd</sup> division in F.Sc, Pre-Medical/A-Level (Biology, Chemistry, Physics) or equivalent.

## **Passing criteria**

- Mid-term examinations as per semester regulations is being held after 9<sup>th</sup> week of start of semester.
- Mid-term covers 20% marks
- A final term examination is being held after 18<sup>th</sup> weeks of start of semester.
- Passing criteria to promote into next semester is to score 50% marks in each subject.



# BS (4 Years)

Bachelor of Science  
in Biochemistry

(4 Years)  
8 Semesters

Total Credit Hours 132

## Eligibility Criteria

At least 45% marks or 2<sup>nd</sup> division in  
F.Sc, Pre-Medical/A-Level (Biology, Chemistry, Physics)  
or equivalent.

## Scheme of Studies BS Biochemistry

SEMESTER	COURSE TITLE	CR. HRS
1 <sup>st</sup>	English-I	3(3+0)
	Pakistan Studies	3(3+0)
	Mathematics I	3(3+0)
	Introduction to Sociology	3(3+0)
	Organic Chemistry	3(2+1)
	Introductory Biochemistry	3(2+1)
<b>Total Credit Hours</b>		<b>18</b>
SEMESTER	COURSE TITLE	CR. HRS
2 <sup>nd</sup>	English-II	3(3+0)
	Islamic studies/Ethics	3(3+0)
	Inorganic Chemistry	3(2+1)
	Mathematics-II	3(3+0)
	Microbiology	3(2+1)
	Carbohydrates & Lipids	3(2+1)
<b>Total Credit Hours</b>		<b>18</b>
SEMESTER	COURSE TITLE	CR. HRS
3 <sup>rd</sup>	English-III	3(3+0)
	Introduction to Computers	3(2+1)
	Physical Chemistry	3(2+1)
	Genetics	3(3+0)
	Proteins & Nucleic Acids	3(2+1)
	Cell Biology	3(2+1)
<b>Total Credit Hours</b>		<b>18</b>

Semester	COURSE TITLE	CR. HRS
4 <sup>th</sup>	Introduction to Statistics	3(3+0)
	Marketing & Management	3(3+0)
	Analytical Chemistry	3(2+1)
	Human Physiology	3(3+0)
	Enzymology	3(2+1)
	Biosafety & Bioethics	3(2+1)
<b>Total Credit Hours</b>		<b>18</b>
Semester	COURSE TITLE	CR. HRS
5 <sup>th</sup>	Metabolism I	3(3+0)
	Molecular Biology	3(3+0)
	Nutritional Biochemistry	3(2+1)
	Bioenergetics	3(3+0)
	Environmental Biochemistry	3(2+1)
<b>Total Credit Hours</b>		<b>15</b>
Semester	COURSE TITLE	CR. HRS
6 <sup>th</sup>	Metabolism II	3(3+0)
	Biochemical Techniques	3(2+1)
	Endocrinology	3(3+0)
	Immunology	3(2+1)
	Recombinant DNA Technology	3(3+0)
<b>Total Credit Hours</b>		<b>15</b>
Semester	COURSE TITLE	CR. HRS
7 <sup>th</sup>	Research Planning & Scientific Writing	3(3+0)
	Biomembranes & Cell Signaling	3(3+0)
	Clinical Biochemistry	3(2+1)
	Optional Course-I	3(3+0)
	Optional Course-II	3(3+0)
<b>Total Credit Hours</b>		<b>15</b>
Semester	COURSE TITLE	CR. HRS
8 <sup>th</sup>	Protein Chemistry	3(3+0)
	Nucleic Acid	3(2+1)
	Research and Thesis/ Literature Review Report/One other optional courses	3(3+0)
	Optional Course-III	3(3+0)
	Optional Course-IV	3(3+0)
<b>Total Credit Hours</b>		<b>15</b>



## Faculty Member of Biochemistry

Dr. Sana Ullah Khan received his Ph.D. degree from the University of Peshawar, accompanied by 10 month research at the University of Cincinnati, OH, U.S.A under the HEC IRSIP Program. He took up a faculty position at Women University Swabi as Assistant Professor in 2017, where he is now Associate Professor and HEC approved Supervisor. He supervised more than 100 students at BS and M.Sc level. His research topics cover a diverse set of organic contaminants related investigations. He is interested in understanding how to remove trace organic contaminants from water using advanced oxidation technologies, and how to develop degradation kinetics and mechanism.



**Dr. Sana Ullah Khan**  
Associate Professor/  
Chairperson

PhD in Biochemistry/Molecular Biology from Quaid I Azam University, Islamabad with experience in Human Molecular Genetics and research expertise in clinical and genetic characterization of human inherited disorders, novel gene/loci, mutations identification, and focusing on establishing genotype phenotype correlations. Rich experience of DNA/RNA extraction, Electrophoresis, PCR, Homozygosity mapping using microsatellite marks and DNA SNP microarray, Primer designing, Sanger Sequencing, segregation analysis, sample preparation for WES, DNA SNP, Whole Exome, Whole Genome sequencing and data analysis and interpretation using in-house tools.



**Dr. Farooq Ahmad**  
Assistant Professor  
Coordinator

Dr. Ome Kalsoom obtained her master degree from Kohat University of Science and Technology in biochemistry. Later, she completed her M.Phil in Biochemistry with distinction from Abdul Wali Khan University Mardan (AWKUM). During her M.Phil research studies, she published research articles in peer reviewed International Journals. After completion of her M. Phil, She joined AWKUM as Biochemistry lecturer and taught for 2 years. Subsequently, Dr. Afridi joined Molecular Biology Laboratory at Kyungpook National University (KNU), South Korea for her graduate studies. During PhD research work, Dr. Afridi worked on metagenomics data characterizing gut microbial dysbiosis using next generation sequencing(NGS), molecular cloning and protein purification and published her research in SCIE journals. Parts of her PhD thesis have been presented at various international conferences across the globe and published in SCIE journals.



**Dr.**  
**Ome Kalsoom Afridi**  
Assistant  
Professor



## Academic Calender (Session 2021-2022) Women University, Swabi

Spring 2022	Study period	28 <sup>th</sup> March,2022- 29 July ,2022
	Mid Term Examination (After 8 Weeks)	23 <sup>th</sup> May 2022-27 <sup>th</sup> May,2022
	Final Term Examination (After 8 weeks)	25 <sup>th</sup> July,2022-29 <sup>nd</sup> July,2022
Fall 2022	Study period	1 <sup>st</sup> September to 13 January ,2023
	Mid Term Examination (After 8 weeks)	27 <sup>th</sup> , October 2022 – 2 <sup>nd</sup> November,2022
	Final Term Examination (After 8 weeks)	04 <sup>th</sup> January,2022-13th January ,2023



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