



WOMEN UNIVERSITY SWABI

KHYBER PAKHTUNKHWA-PAKISTAN

Department of Chemistry





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 Chemistry

Vision

To be a platform for providing advance academic standards in the chemical sciences to educate women of Pakistan. This education will not only increase their knowledge, but also empower their role in the society to become an effective figure in the development of the country.

Mission

The Department of chemistry is future oriented and is committed to achieving excellence in under graduated and graduate education research and public service. Department services the society through research creative activity, scholarship inquiry and development of knowledge.

**BS
Chemistry**

**Msc
Chemistry**

**M.Phil
Chemistry**

ABOUT US

Women University Swabi is committed to empower women through higher education and provide them opportunities to work in educational and R & D of the country. Department of Chemistry in Women University, Swabi was established in December 2013 and offering various degree programs as BS, MSc and MPhil programs according to the demand of national and international market. It will initiate PhD Program as well in near future.

The Department offers four major interrelated and overlapping sub disciplines that deal primarily with the chemistry of inorganic substances (inorganic chemistry), the chemistry of carbon compounds (organic chemistry), the chemistry of living systems (biochemistry), and the physical behavior of substances in relation to their structures and chemical properties (physical chemistry). The Chemistry/Materials Science is designed for students who are interested in the applications of chemistry for the design, synthesis, and study of new materials.

The department of Chemistry is one of the most prominent departments in university with noticeable strength of students from 35 to 50 students per class. The department has essential lab. facilities and instruments to conduct practical and innovative research. Young researchers can easily conduct research in environmental pollution, photo catalysis, water treatment, renewable energy production, conductive materials, advanced oxidation process, removal of toxic pollutants and synthesis of new materials etc. Laboratory facilities include HPLC, GC-MS, Atomic Absorption, IR spectrophotometer, UV-visible spectrophotometer, pH Meter, Hot plates, Centrifuge machines, High temperature furnace, Oven, Distillation plant, Weighing machines, Rotary setup and Computers for research in computational chemistry.

**Faculty Members of
Department of Chemistry**

Dr. Muhammad Ismail
Chairperson/Associate Professor
Ph.D Chemistry



Dr. Sana Ullah Khan
Associate Professor
Ph.D Physical Chemistry



Dr. Salma Gul
Associate Professor
Ph.D Physical Chemistry



Ms. Gul Rukh
Coordinator/Lecturer
M.Phil Organic Chemistry



Dr. Gulab Said
Assistant Professor
Ph.D Organic/Medicinal/Natural
Product Chemistry



Dr. Rehana Bibi
Assitant Professor
Ph.D Environmental/Material Chemistry



Dr. Shehna Farooq
Assistant Professor
Ph.D Physical Chemistry



Ms. Sabeena
Lecturer
Ph.D Physical Chemistry





- To encourage and enhance the university's entrepreneurial environment by strengthening university-industry linkage as well as expanding partnerships with the public and private sector organizations, national and international donors and all other community based organizations.
- To start collaboration for both national international linkages, mostly with well-known universities based on joint research proposals for various source of funding.
- To organize regular scientific seminars, symposium etc at Women University, Swabi to promote the culture of interaction and sharing of scientific knowledge with researchers around the world.
- To start and support PhD programs in Department of Chemistry, WUS to enhance research activities.

Job Opportunities

For a Chemistry graduate Jobs opportunities are available in various fields such as;

- Academia
- Research Institute
- Atomic Energy
- Pharmaceuticals
- Civil Services
- Commission
- Environmental Agencies
- Various Industries such as Glass, Cement, Oil and Ghee, Food, Plastic, agrochemical etc.

Salient Features

- Foreign Qualified PhD Faculty
- Digital Student Portal
- Spacious Classrooms
- Well Equipped Labs
- Digital Library
- Transport Facility

Scholarship Opportunities

- Diya Scholarship
- Merit Scholarship
- Fauji Fertilizer Scholarship
- Karwan e Ilum Foundation Scholarship
- HEC Ehsas Scholarship
- HEC Need Based Scholarship
- Baitul Maal Scholarship
- MORA Scholarship

BS Chemistry (4 Years)

(4 Years)
8 Semesters

Total Credit Hours

120

Admission Criteria

- 12 years of formal education F.Sc. / A level or equivalent.
- Minimum 45 % marks at intermediate level or equivalent.

Scheme of Studies BS Chemistry

COURSE TITLE	COURSE CODE	CR. HRS
Semester 1		
English Grammar and Composition	Eng-Comp-3101	3(3+0)
Introduction to Computer	CS-Comp-3104	3(2+1)
Mathematics-I	Math-Comp-3101	3(3+0)
Principles of Animal Life	Zool- Gen -3101	2(2+0)
Diversity of Plants	Bot- Gen -3101	2(2+0)
Semester 2		
Basic Communication Skills	Eng-Comp-3204	3(3+0)
Islamic Studies	IslS-Comp-3201	2(2+0)
Software Packages	CS-Gen-3203	3(1+2)
Mathematics-II	Math-Comp-3204	3(3+0)
Introduction to Social Psychology	Psy-Gen-3102	3(3+0)
Organic Chemistry	Chem-Org-3201	4(3+1)

COURSE TITLE	COURSE CODE	CR. HRS
Semester 3		
Technical Report Writing	Eng-Comp-4107	3(3+0)
Pakistan Studies	PakS-Comp-3101	3(3+0)
Environmental Chemistry	Chem-Env-4101	3(2+1)
Cell Biology, Genetics and Evolution	Bot- Gen -4103	3(2+1)
Animal Diversity-I	Zool- Gen-4103	3(2+1)
Semester 4		
Introduction to Statistics	Stat-Comp-3101	3(3+0)
Medicinal Plants	Bot- Gen -4206	3(2+1)
Animal Diversity-II	Zool- Gen -4202	3(2+1)
Analytical Chemistry	Chem-Ana-4201	2(2+0)
Applied Chemistry	Chem-App-4201	2(2+0)
Biochemistry	Chem-Bio-4201	2(2+0)
Combine Lab	Chem-Lab-4201	2(0+2)
Semester 5		
Inorganic Chemistry	Chem-Inorg-5102	4(3+1)
Organic Chemistry	Chem-Org-5102	4(3+1)
Physical Chemistry	Chem-Phy-5102	4(3+1)
Analytical Chemistry	Chem-Ana-5102	4(3+1)
Semester 6		
Inorganic Chemistry	Chem-Inorg-5203	4(3+1)
Organic Chemistry	Chem-Org-5203	4(3+1)
Physical Chemistry	Chem-Phy-5203	4(3+1)
Analytical Chemistry/ Biochemistry/Applied Chemistry/Fuel Chemistry etc.	Chem-Ana-5203/ Chem-Bio-5202/ Chem-App-5202/ Chem-Ful-5201	4(3+1)

**Specialization in Inorganic / Organic / Physical /
Analytical Chemistry / Applied Chemistry /
Bio Chemistry and Fuel Chemistry**

Specialization	Semester 7	Course Title	Course Code	Cr. Hrs
Papers – I				
Inorganic		Inorganic reaction mechanism	Chem-Inorg-6104	3(3+0)
Organic		Synthesis and Mechanism-I	Chem-Org-6104	
Physical		Electrochemistry & statistical thermodynamics	Chem-Phy-6104	
Analytical		Spectroscopic methods of analysis	Chem-Ana-6104	
Applied		Common Industries-I	Chem-App-6103	
Bio Chemistry		General biochemistry related to biomedical sciences	Chem-Bio-6103	
Fuel Chemistry		Chemistry of coal conversion processes-I	Chem-Ful-6102	
Papers – II				
Inorganic		Bioinorganic Chemistry	Chem-Inorg-6105	3(3+0)
Organic		Reactive intermediate and rearrangement reactions	Chem-Org-6105	
Physical		Polymer Chemistry	Chem-Phy-6105	
Analytical		Electrochemical Methods	Chem-Ana-6105	
Applied		Agro based industries	Chem-App-6104	
Bio Chemistry		Physical techniques in biochemistry	Chem-Bio-6104	
Fuel Chemistry		Petroleum and petrochemicals	Chem-Ful-6103	
Papers – III				
Inorganic		Spectroscopy & instrumental methods of analysis	Chem-Inorg-6106	3(3+0)
Organic		Organic spectroscopy	Chem-Org-6106	
Physical		Quantum chemistry & molecular spectroscopy	Chem-Phy-6106	
Analytical		Emission spectroscopy & radiochemical methods	Chem-Ana-6106	
Applied		Common industries II	Chem-App-6105	
Bio Chemistry		Molecular biology	Chem-Bio-6105	
Fuel Chemistry		Characterization of fossil fuels by advance instruments	Chem-Ful-6104	
Practical – I				
Inorganic		As per courses	Chem-Inorg-6107	1(0+1)
Organic			Chem-Org-6107	
Physical			Chem-Phy-6107	
Analytical			Chem-Ana-6107	
Applied			Chem-App-6106	
Bio Chemistry			Chem-Bio-6106	
Fuel Chemistry			Chem-Ful-6105	
Elective Course-I				
Course code will depend on course selected from other specializations		(Other than the field of specialization) Title will be the same as offered in a particular specialization		3(3+0)
Research Project/Advanced Special Practical		Thesis /Advanced Special Practical-I	Chem-RS-6101 Chem-Asp-6101	2(4/2)
	Total			15

Specialization	Course Title	Course Code	Cr. Hrs
Semester 8			
Paper-IV			
Inorganic Organic Physical Analytical Applied Bio-Chemistry Fuel Chemistry	Organometallic chemistry Reaction mechanism determination, biomolecules and synthetic drugs Advanced chemical kinetics Hyphenated techniques Organic based industries Physiological Chemistry & chemotherapy Chemistry of coal conversion processes II	Chem-Inorg-6208 Chem-Org -6208 Chem-Phy-6208 Chem-Ana-6208 Chem-App-6207 Chem-Bio-6207 Chem-Ful-6206	3(3+0)
Paper-V			
Inorganic Organic Physical Analytical Applied Bio-Chemistry Fuel Chemistry	Elementary group theory Natural product chemistry Radiation & photochemistry Advanced chromatography Industrial products Microbiology & immunology Petroleum & petrochemical II	Chem-Inorg-6209 Chem-Org -6209 Chem-Phy-6209 Chem-Ana-6209 Chem-App-6208 Chem-Bio-6208 Chem-Ful-6207	3(3+0)
Paper-VI			
Inorganic Organic Physical Analytical Applied Bio-Chemistry Fuel Chemistry	Nuclear chemistry Synthesis & mechanism III Solid state chemistry, surface chemistry & catalysis Special topics Metallurgy Nutrition Characterization of fossil fuels by advance instrumental techniques	Chem-Inorg-6210 Chem-Org -6210 Chem-Phy-6210 Chem-Ana-6210 Chem-App-6209 Chem-Bio-6209 Chem-Ful-6208	3(3+0)
Practical-II			
Inorganic Organic Physical Analytical Applied Bio-Chemistry Fuel Chemistry	Based on courses	Chem-Inog-6211 Chem-Org-6211 Chem-Phy-6211 Chem-Ana-6211 Chem-App-6210 Chem-Bio-6210 Chem-Ful-6209	1(0+1)
Elective Course-II			
	(Other than the field of Specialization) Title will be the same as offered in a particular specialization		3(3+0)
Research Project/Advanc ed Special Practical	Thesis /Advanced Special Practical-II	Chem-RS-6101 Chem-Asp-6101	2(4/2)
Total			15

MSc (2 Years) Chemistry

(2 Years)
4 Semesters

Total Credit Hours 68

Admission Criteria

- BSc with at least 45% marks

Scheme of Studies MSc Chemistry

COURSE TITLE	COURSE CODE	CR. HRS
Semester 1		
Inorganic Chemistry	Chem-Inorg-5101	4(3+1)
Organic Chemistry	Chem-Org-5101	4(3+1)
Physical Chemistry	Chem-Phy-5101	4(3+1)
Analytical Chemistry	Chem-Ana-5101	4(3+1)
Mathematics for Chemist	Chem-Math-5101	2(2+0)
Semester 2		
Inorganic Chemistry	Chem-Inorg-5202	4(3+1)
Organic Chemistry	Chem-Org-5202	4(3+1)
Physical Chemistry	Chem-Phy-5202	4(3+1)
Environmental Chemistry	Chem-Env-5201	2(2+0)
Analytical Chemistry/ Biochemistry/Applied Chemistry/Fuel Chemistry etc.	Chem-Ana-5202/ Chem-Bio-5201/ Chem-App-5201/ Chem-Ful-5201	4(3+1)

**Specialization in Inorganic / Organic / Physical /
Analytical Chemistry / Applied Chemistry /
Bio Chemistry and Fuel Chemistry**

Specialization	Course Title	Course Code	Cr. Hrs
Semester 3			
Papers – I			
Inorganic	Inorganic reaction mechanism	Chem-Inorg-6103	3(3+0)
Organic	Synthesis and Mechanism-I	Chem-Org-6103	
Physical	Electrochemistry & statistical thermodynamics	Chem-Phy-6103	
Analytical	Spectroscopic methods of analysis	Chem-Ana-6103	
Applied	Common Industries-I	Chem-App-6102	
Bio Chemistry	General biochemistry related to biomedical sciences	Chem-Bio-6102	
Fuel Chemistry	Chemistry of coal conversion processes-I	Chem-Ful-6102	
Papers – II			
Inorganic	Bioinorganic Chemistry	Chem-Inorg-6104	3(3+0)
Organic	Reactive intermediate and rearrangement reactions	Chem-Org-6104	
Physical	Polymer Chemistry	Chem-Phy-6104	
Analytical	Electrochemical Methods	Chem-Ana-6104	
Applied	Agro based industries	Chem-App-6103	
Bio Chemistry	Physical techniques in biochemistry	Chem-Bio-6103	
Fuel Chemistry	Petroleum and petrochemicals	Chem-Ful-6103	
Papers – III			
Inorganic	Spectroscopy & instrumental methods of analysis	Chem-Inorg-6105	3(3+0)
Organic	Organic spectroscopy	Chem-Org-6105	
Physical	Quantum chemistry & molecular spectroscopy	Chem-Phy-6105	
Analytical	Emission spectroscopy & radiochemical methods	Chem-Ana-6105	
Applied	Common industries II	Chem-App-6104	
Bio Chemistry	Molecular biology	Chem-Bio-6104	
Fuel Chemistry	Characterization of fossil fuels by advance instruments	Chem-Ful-6104	
Practical – I			
Inorganic	As per courses	Chem-Inorg-6106	1(0+1)
Organic		Chem-Org-6106	
Physical		Chem-Phy-6106	
Analytical		Chem-Ana-6106	
Applied		Chem-App-6105	
Bio Chemistry		Chem-Bio-6105	
Fuel Chemistry		Chem-Ful-6105	
Elective Course-I			
Course code will depend on course selected from other specializations	(Other than the field of specialization) Title will be the same as offered in a particular specialization		3(3+0)
Research Project/Advanced Special Practical	Thesis /Advanced Special Practical-I	Chem-RS-6101 Chem-Asp-6101	2(4/2)
	Total		15

Specialization	Course Title	Course Code	Cr. Hrs
Semester 4			
Paper-IV			
Inorganic Organic Physical Analytical Applied Bio-Chemistry Fuel Chemistry	Organometallic chemistry Reaction mechanism determination, biomolecules and synthetic drugs Advanced chemical kinetics Hyphenated techniques Organic based industries Physiological Chemistry & chemotherapy Chemistry of coal conversion processes II	Chem-Inorg-6207 Chem-Org -6207 Chem-Phy-6207 Chem-Ana-6207 Chem-App-6206 Chem-Bio-6206 Chem-Ful-6206	3(3+0)
Paper-V			
Inorganic Organic Physical Analytical Applied Bio-Chemistry Fuel Chemistry	Elementary group theory Natural product chemistry Radiation & photochemistry Advanced chromatography Industrial products Microbiology & immunology Petroleum & petrochemical II	Chem-Inorg-6208 Chem-Org -6208 Chem-Phy-6208 Chem-Ana-6208 Chem-App-6207 Chem-Bio-6207 Chem-Ful-6207	3(3+0)
Paper-VI			
Inorganic Organic Physical Analytical Applied Bio-Chemistry Fuel Chemistry	Nuclear chemistry Synthesis & mechanism III Solid state chemistry, surface chemistry & catalysis Special topics Metallurgy Nutrition Characterization of fossil fuels by advance instrumental techniques	Chem-Inorg-6209 Chem-Org -6209 Chem-Phy-6209 Chem-Ana-6209 Chem-App-6208 Chem-Bio-6208 Chem-Ful-6208	3(3+0)
Practical-II			
Inorganic Organic Physical Analytical Applied Bio-Chemistry Fuel Chemistry	Based on courses	Chem-Inog-6210 Chem-Org-6210 Chem-Phy-6210 Chem-Ana-6210 Chem-App-6209 Chem-Bio-6209 Chem-Ful-6209	1(0+1)
Elective Course-II			
	(Other than the field of Specialization)		3(3+0)
	Title will be the same as offered in a particular specialization		3(3+0)
Research Project/Advanced Special Practical	Thesis /Advanced Special Practical-II	Chem-RS-6101 Chem-Asp-6101	2(4/2)
Total			15

Events Organized:

- Dr. Muhammad Ismail, organized “Food Gala and Exhibition - 2020” held on 5th December 2020 at Women University Swabi.
- Department of Chemistry organized Seminar and Debate on “Water Risk in Pakistan” held on 5th December 2020 at Women University Swabi.
- Department of Chemistry and ORIC organized Seminar on “Digiskills.pk” presented by Samar Hassan, Mahnoor, and Ismail Khan” held on 30th January 2020 at Women University Swabi.
- Dr. Muhammad Ismail invited and organized Seminar for Mr. Cedric Martinez from France and he presented on “Applications of Potentiostat /Galvanostat” held on 29 January 2020 at video conference room, Women University Swabi.
- Department of Chemistry and ORIC organized two session of 3-days training on “Women in learning and leadership training and capacity enhancement session for gender inclusive socioeconomic development” held in the Women University, Swabi with collaboration of Shaor foundation on October 6-8, 2021 and October 20-22, 2021.
- Department of Chemistry organized a seminar entitled “Interrelationship of Environment, Energy and Economy; Recent trends; Chemical approaches towards Energy production and storage for an Environment friendly future” on Tuesday, May 17, 2022 in the main hall of Women University Swabi, Gullo Deri campus, Swabi (Speaker: Prof. Dr. S. Arif Khan).

