

## DEPARTMENT OF CHEMISTRY

Chemistry exist everywhere, from internationally active chemical companies to the way your own body works. It cover all subjects from almost all sciences: physics, biology, also pharmacy and medicine etc. which play a vital role in today's scientific world. The department of chemistry, faculty of sciences, Sarhad University, Peshawar, offers an environment where in the students can explore, discover and learn chemistry through course work as well as practical.

The department maintains a pedagogical and didactic strength in the field of organic, inorganic, physical, biochemistry and analytical chemistry. The labs are well equipped to undertake conventional as well as instrumental analysis to combat the emerging challenges in all afore mentioned fields of chemical sciences. Higher Education Commission is mainly focusing on Research and Development which play a vital role in the socio-economic development, progress and prosperity of the country. The faculty has therefore, launched value added R & D Program (in the form of Research Reports) for the final semester students of chemistry.

The faculty is devoted to excellence in education, engaging students at the cutting edge of science, sharing expertise and has pursuit towards excellence in knowledge to enrich the local and international communities. The department also offers outstanding opportunities for the students to explore the exciting world of chemistry and develop communication and problem-solving skills needed for success in their careers, and personal growth.

The students are also encouraged to enhance their educational experiences beyond the classroom. Each student of the chemistry department is carefully molded and trained to face the challenges in their respective fields of specialization. The faculty of the department is well qualified to the level of M.Phil and Ph.D, most of who have obtained their training from renowned institutions at national and international levels, and are actively engaged in teaching and research in goal oriented fields of chemistry.

## VISION

The Department of Chemistry, the sole department of chemical sciences was established in year 2009 at Sarhad University of Science & IT, a highest ranked private university of KP. The department strives to be a nationally recognized model for educating and graduating students, prepared to contribute for boosting up the socio-economic growth of the country and to compete the ever-changing and globally emerging technologies of the 21st century. We also endeavor to contribute to a chemically literate society through teaching (with classrooms, labs, and research).

## MISSION

The mission of the Department of Chemistry is to advance the chemical sciences through educating graduate and postgraduate students by providing them with well-furnished classrooms, well equipped labs and state-of-the-art equipment. The department provides rigorous preparation of citizens whose career paths require expertise in chemistry.

## PROGRAM OFFERED: Bachelor of Science in Chemistry

## FACULTY MEMBERS, DEPARTMENT OF CHEMISTRY

Ms. Kehkashan Sabir  
Mr. M. Muzamil Arshad  
Mr. Junaid Ihsan

Head of the Department  
Lecturer  
Lecturer (On Leave)

M.Phil (Biochemistry) Sarhad University, Peshawar  
M.Phil (Biochemistry) Sarhad University, Peshawar  
M.Phil (Physical Chemistry), Quaid E Azam University, Islamabad

# Bachelor of Science in Chemistry

Program Code	114
Number of Courses	55
Credit Hours	129
Minimum Duration	8 Semesters, 4 Years
Maximum Duration	16 Semesters, 8 Years
Minimum CGPA Required To Earn Degree	2.00

## Eligibility :

- Candidates having F.Sc or A-levels having equivalency certificate and at least 45% marks are eligible to apply.
- Candidates holding Associate Degree in relevant discipline with at least 2.00 CGPA on the scale of 4.00 from any recognized university/ institution will join from the 5th semester of their degree program. Minimum duration of their degrees shall be 2 years.
- Candidates holding Bachelor degree (14 years of education) with at least 45% marks in annual system or Associate Degree in other than relevant discipline with at least 2.00 CGPA on the scale of 4.00 from any recognized university/ institution will join from the Bridge semester of their degree program. Minimum duration of their degrees shall be 2.5 years.
- Candidates needs to pass an entry test or an aptitude interview conducted by the University.

## Program Objectives:

The four-year program is designed in accordance to guidelines set by HEC. The program is aimed at to make the students conversant with all branches of chemistry and will focus not only on the theoretical background of chemical sciences but also will pave way for conducting Research and its compilation in the form of Project Reports.

## Program Outcomes:

After completion of the BS Chemistry program, students will have the capability to;

- Understand and apply the practical and theoretical knowledge related to all branches / disciplines of chemistry they have studied at the BS level.
- Independently undertake all the analytical assignments related to qualitative and quantitative assessments of samples of the minerals, ores,

environment etc, along with solution of trouble shootings.

- Carry out independently R&D on different projects as well as routine lab work whenever assigned to them.
- Utilize and work on various analytical modern and sophisticated Equipments and tools in labs and research institutes.
- Articulate thoughts and ideas through oral and written communication.
- A recognition of the need for, and an ability to engage in life-long learning

## \* BRIDGE SEMESTER

Course Code	Course Title	Cr. Hrs.16
CH 150	Inorganic Chemistry-I	3-0
CH 151	Inorganic Chemistry (Lab)-I	0-1
CH 160	Organic Chemistry-I	3-0
CH 161	Organic Chemistry (Lab)-I	0-1
CH 270	Physical Chemistry-I	3-0
CH 271	Physical Chemistry (Lab)-I	0-1
CH 210	Analytical Chemistry-I	2-0
CH 220	Applied Chemistry-I	2-0

## 1<sup>st</sup> SEMESTER

Course Code	Course Title	Cr. Hrs.16
ENG 100	Functional Communication (English-I)	3-0
CH 150	Inorganic Chemistry-I	3-0
CH 151	Inorganic Chemistry Lab-I	0-1
	General Elective-I	3-0
	General Elective-II	3-0
BIO 100	General Biology-I OR	3-0
MA 100	Mathematics-I (Pre-Calculus)	3-0

## 2<sup>nd</sup> SEMESTER

Course Code	Course Title	Cr. Hrs.16
ENG 111	Basic Communication Skills	3-0
CH 160	Organic Chemistry-I	3-0
CH 161	Organic Chemistry Lab-I	0-1
ST 100	Bio Statistics	3-0
	General Elective-III	3-0
MA 101	Calculus & Analytical Geometry OR	3-0
BIO 101	General Biology-II	3-0
GS 123/240	Islamic Studies/Values, Ethics & Society (For Non Muslims)	2-0

## 3<sup>rd</sup> SEMESTER

Course Code	Course Title	Cr. Hrs.17
ENG 200	Technical Report Writing	2-0
GS 200	Pakistan Studies	2-0
CH 240	Environmental Chemistry-I	3-0
CH 270	Physical Chemistry-I	3-0
CH 271	Physical Chemistry Lab-I	0-1
	General Elective-IV	3-0
	General Elective-V	3-0

## 4<sup>th</sup> SEMESTER

Course Code	Course Title	Cr. Hrs.16
ENG 201	Communication & Presentation Skills	2-0
CH 210	Analytical Chemistry-I	2-0
CH 220	Applied Chemistry-I	2-0
CH 230	Bio Chemistry-I	2-0
CH 280	Fuel Chemistry-I	2-0
	General Elective-VI	3-0
	General Elective-VII	3-0

## 5<sup>th</sup> SEMESTER

Course Code	Course Title	Cr. Hrs.16
CH 350	Inorganic Chemistry-II	3-0
CH 351	Inorganic Chemistry Lab-II	0-1
CH 360	Organic Chemistry-II	3-0
CH 361	Organic Chemistry Lab-II	0-1
CH 370	Physical Chemistry-II	3-0
CH 371	Physical Chemistry Lab-II	0-1
One of the following		
CH 311	Analytical Chemistry-II	3-0
CH 312	Analytical Chemistry Lab- II	0-1
CH 331	Bio Chemistry-II	3-0
CH 332	Bio Chemistry Lab-II	0-1
CH 321	Applied Chemistry-II	3-0
CH 322	Applied Chemistry Lab-II	0-1
CH 381	Fuel Chemistry-II	3-0
CH 382	Fuel Chemistry Lab-II	0-1

## 6<sup>th</sup> SEMESTER

Course Code	Course Title	Cr. Hrs.16
CH 352	Inorganic Chemistry-III	3-0
CH 353	Inorganic Chemistry Lab-III	0-1
CH 362	Organic Chemistry-III	3-0
CH 363	Organic Chemistry Lab-III	0-1
CH 372	Physical Chemistry-III	3-0
CH 373	Physical Chemistry Lab-III	0-1
One of the Following		
CH 313	Analytical Chemistry-III	3-0
CH 314	Analytical Chemistry Lab-III	0-1
CH 333	Bio Chemistry-III	3-0
CH 334	Bio Chemistry Lab-III	0-1
CH 323	Applied Chemistry-III	3-0
CH 324	Applied Chemistry Lab-III	0-1
CH 383	Fuel Chemistry-III	3-0
CH 384	Fuel Chemistry Lab-III	0-1

## Bachelor of Science in Chemistry

### 7<sup>th</sup> SEMESTER

Course Code	Course Title	Cr. Hrs.16
	Specialization Elective I	3-0
	Specialization Elective II	3-0
	Specialization Elective III	3-0
	Specialization Practical I	0-1
	Minor Elective I	3-0
RES 490	Project Phase I	0-3

### 8<sup>th</sup> SEMESTER

Course Code	Course Title	Cr. Hrs.16
	Specialization Elective IV	3-0
	Specialization Elective V	3-0
	Specialization Elective VI	3-0
	Specialization Practical II	0-1
	Minor Elective II	3-0
RES 490	Project Phase - II	0-3

### General Electives

Course Code	Course Title	Cr. Hrs.16
PSY 319	Psychology	3-0
CE 355	Environmental Management	3-0
SBE 303	Human Development and Learning	3-0
MGT 270	Entrepreneurship	3-0
FIN 230	Introductory Business Finance	3-0
GS 322	Sociology	3-0
BT 101	General Biotechnology I	3-0
GS 111	Physics-I	2-0
GS 112	Physics Lab-I	0-1
IT 212	Database Concepts	2-0
IT 213	Database Concepts Lab	0-1
MGT 106	Principles of Management	3-0
GS 302	Logic and Critical Thinking	3-0
EDU 339	Contemporary Social Issues	4-0
HR 332	Human Resource Management	3-0
ACC 121	Principles of Accounting	3-0
GS 250	Geo Informatics	3-0
BT 215	Microbiology	2-0
BT 216	Microbiology Lab	0-1
CS 116	Programing Fundamentals	2-0
CS 117	Programing Fundamentals Lab	0-1

### Specialization Electives

Course Code	Course Title	Cr. Hrs.16
CH 411	Analytical Chemistry Paper I	3-0
CH 412	Analytical Chemistry Paper II	3-0
CH 413	Analytical Chemistry Paper III	3-0
CH 414	Analytical Chemistry Paper IV	3-0
CH 415	Analytical Chemistry Paper V	3-0
CH 416	Analytical Chemistry Paper VI	3-0
CH 417	Analytical Chemistry Practical I	0-1
CH 418	Analytical Chemistry Practical II	0-1
CH 431	Bio Chemistry Paper I	3-0
CH 432	Bio Chemistry Paper II	3-0
CH 433	Bio Chemistry Paper III	3-0
CH 434	Bio Chemistry Paper IV	3-0
CH 435	Bio Chemistry Paper V	3-0
CH 436	Bio Chemistry Paper VI	3-0
CH 437	Bio Chemistry Practical I	0-1
CH 438	Bio Chemistry Practical II	0-1
CH 451	Inorganic Chemistry Paper I	3-0
CH 452	Inorganic Chemistry Paper II	3-0
CH 453	Inorganic Chemistry Paper III	3-0
CH 454	Inorganic Chemistry Paper IV	3-0
CH 455	Inorganic Chemistry Paper V	3-0
CH 456	Inorganic Chemistry Paper VI	3-0
CH 457	Inorganic Chemistry Practical I	0-1
CH 458	Inorganic Chemistry Practical II	0-1
CH 471	Physical Chemistry Paper I	3-0
CH 472	Physical Chemistry Paper II	3-0
CH 473	Physical Chemistry Paper III	3-0
CH 474	Physical Chemistry Paper IV	3-0
CH 475	Physical Chemistry Paper V	3-0
CH 476	Physical Chemistry Paper VI	3-0
CH 477	Physical Chemistry Practical I	0-1
CH 478	Physical Chemistry Practical II	0-1
CH 461	Organic Chemistry Paper I	3-0
CH 462	Organic Chemistry Paper II	3-0
CH 463	Organic Chemistry Paper III	3-0
CH 464	Organic Chemistry Paper IV	3-0
CH 465	Organic Chemistry Paper V	3-0
CH 466	Organic Chemistry Paper VI	3-0
CH 467	Organic Chemistry Practical I	0-3
CH 468	Organic Chemistry Practical	0-3

The facility for teaching of any of the elective course will be arranged only if reasonable number of students opt for.

**NOTE: Students are required to study The Holy Quran as per the directive of the Government of Pakistan. See section 5 (a) e (i and ii).**