

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