

SCHEME OF COURSES/SYLLABI FOR BS (4 YEAR) PROGRAM IN CHEMISTRY FOR SESSION 2023

	Year – I: Semester I	Cr. Hrs 19	
Code	Title	Theory	LAB
HU-111	Communication Skills		1
IS-101	Islamic Studies/Pak studies I	3	
Math-101	Calculus I	3	
CS-101	Computing Fundamentals	2	1
Phys-101	Mechanics	3	
Phys-101L	Mechanics Lab		1
CY- 151	Introduction to Physical Chemistry	2	
CY-121	Introduction to Inorganic Chemistry	2	
QT - 101	Translation of the Holy Quran - 1	1	
	Total	16	3

	Year – I: Semester II	Cr. Hrs 18	
Code	Title	Theory	LAB
HU-221	Technical Writing and Presentation Skills	3	
IS-201	Islamic Studies/Pak studies II	3	
Math-105	Statistics	3	
CY-141	Biochemistry and Biotechnology	3	
MGT-100	Introduction to Business	3	
CY-111	Introduction to Analytical Chemistry	2	
CY-111L	Introduction to Analytical Chemistry Lab		1
	Total	17	1

	Year – 2: Semester III	Cr. Hrs 19	
Code	Title	Theory	LAB
Math-203 & 203L	Scientific Programming	2	1
CY-252	Physical Chemistry – I	2	1
CY-222	Inorganic Chemistry – I	2	1
CY-261	Organic Chemistry-I	2	1
CY-201	Environmental Sciences	3	
CY-212	Analytical Chemistry 1	2	1
QT-201	Translation of the Holy Quran - 2	1	
	Total	14	5

	Year – 2: Semester IV	Cr. Hrs. 17	
Code	Title	Theory	LAB
CY-253	Physical Chemistry – II	2	1
CY-213	Analytical Chemistry II	2	1
CY-223	Inorganic Chemistry-II	2	1
CY-262	Organic Chemistry-II	2	1
CY-204	Energy Resources of Pakistan and its Management	2	
Math-205	Ordinary Differential Equations	3	
	Total	13	4

	Year – 3: Semester V	Cr. Hrs. 18	
Code	Title	Theory	LAB
CY-314	Analytical Chemistry-III	3	1
CY-324	Inorganic Chemistry-III	3	1
CY-363	Organic Chemistry-III	3	1
CY-354	Physical Chemistry-III	3	1
HU-204	Foreign Languages (Any)	1	
QT - 301	Translation of the Holy Quran – 3	1	
	Total	14	4

	Year – 3: Semester VI	Cr. Hrs 18	
Code	Title		
CY-315 /CY 331	Analytical Chemistry-IV/ Applied Chemistry	3	1
CY-325	Inorganic Chemistry-IV	3	1
CY-364	Organic Chemistry-IV	3	1
CY-355	Physical Chemistry-IV	3	1
CY-301	Work place hazardous materials information	2	
	Total	14	4

Year 4

	Year – 4: Semester VII	Cr. Hrs 19	
Code	Title		
CY-4--*	Advanced Paper I	3	
CY-4--*	Advanced Paper II	3	
CY-4--*	Experimental Methods	3	
CY-491	Scientific Report Writing	3	
CY-492	Research Project/Internship and Report Writing /Additional Paper (3 credit)		3
QT - 401	Translation of the Holy Quran – 4	1	
	Total	13	3

***Three Courses from the field of specialization (Two Theory and one Experimental Methods)**

CY-491 Scientific Report Writing (Common to all) **(3 Cr Hrs.)**

CY- 492 Research Project/Internship and Report Writing /Additional Paper (3 credit)

Total (12 credit hours + 3 credit hour research = 15) 600 Marks

8th Semester

	Year – 4: Semester VIII	Cr. Hrs. 15	
Code	Title		
CY-4--*	Advanced Paper IV	3	
CY-4--*	Advanced Paper V	3	
CY-4--*	Experimental Methods	3	
CY-4--*	Elective Course (Other than the field of specialization)	3	
CY-492	Research Project/Social Services and Report Writing /Additional Paper (3 credit)		3
	Total	12	3

***Three Courses from the field of specialization (Two theory and one experimental) (9 Cr Hrs.)**

Elective Course I (Other than the field of specialization **(3 Cr Hrs.)**)

CY- 492 Research Project/Internship and Report Writing /Additional Paper (3 credit)

Total (12 Credit hrs. + 3 Cr hrs. Research) 600 Marks

Total Credit hrs. 15

Total Credit Hours 139

Final Year Subject Specialization

Code	Specialization
1 & 2	Inorganic and Analytical Chemistry
3, 7 & 8	Industrial, Environmental and Polymer Chemistry
4 & 0	Biochemistry and Microbiology
5	Physical and Electrochemistry
6	Organic Chemistry (Organic, Food and Biochemistry)

Specialization in Inorganic & Analytical Chemistry

Course Codes	Subjects
CY-411	Spectroscopic Techniques
CY-412	Thermal Analysis
CY-413	Electroanalytical Techniques
CY-414	Statistical Data Handling and Spreadsheets
CY-415	Vacuum Techniques In Analytical Chemistry
CY-416	Physicochemical Methods of Analysis
CY-418	Experimental Methods in Analytical Chemistry I
CY-419	Experimental Methods in Analytical Chemistry II
CY-421	Introduction to Organometallic Chemistry
CY-422	Inorganic Catalysis
CY-423	Principles of Bioinorganic Chemistry
CY-424	Inorganic Chemistry of Main Group Elements
CY-425	Special Topics in Inorganic Chemistry
CY-426	Experimental Methods in Inorganic Chemistry I
CY-427	Experimental Methods in Inorganic Chemistry II

Specialization in Industrial, Environmental & Polymer Chemistry

Course Codes	Subjects
CY-431	Organic Based Industries
CY-432	Agro Based Industries and Pollution Control
CY-433	Industrial Process
CY-434	Projects of Applied Chemistry
CY-435	Experimental Methods in Industrial Chemistry I
CY-436	Experimental Methods in Industrial Chemistry II
CY-481	Fundamentals of Environmental Chemistry
CY-482	Environmental Toxicology
CY-483	Green Chemistry
CY-484	Environmental Chemistry
CY-485	Environmental Law
CY-486	Projects of energy resources of Pakistan and its management
CY-487	Experimental Methods in Environmental Chemistry
CY-471	Polymer Chemistry
CY-472	Polymer Blends and Composites
CY-473	Degradable Polymeric Materials
CY-474	Polymer Analysis and Characterization
CY-475	Functional Polymeric Materials
CY-476	Experimental Methods in Polymer Chemistry

Specialization in Organic and Food Chemistry

Course Codes	Subjects
CY-461	Organic Spectroscopy
CY-462	Heterocyclic and Organometallic Compounds
CY-463	Reaction Mechanism And Reactive Intermediates
CY-464	Natural Products
CY-465	Advance Food Chemistry and Technology
CY-466	Food Laws and Regulations
CY-467	Food Technology in Dairy
CY-468	Experimental Methods in Organic Chemistry
CY-469	Experimental Methods in Food Chemistry
CY-401	Essentials of Microbiology
CY-402	Introduction to Microbiology
CY-403	Chemical Microbiology
CY-441	Structural Biochemistry
CY-442	Biochemistry of Metabolism
CY-443	Informational Macromolecules
CY-444	Bioenergetics
CY-445	Nutritional Biochemistry
CY-446	Advance Protein Chemistry
CY-447	Enzymes and Enzymology
CY-448	Metabolism and Related Diseases
CY-449	Experimental Methods in Biochemistry
CY-404	Experimental Methods in Microbiology

Specialization in Physical & Electrochemistry

Course Codes	Subjects
CY-451	Solid State and Material Chemistry
CY-452	Thermodynamics
CY-453	Electrochemistry and Clean Energy
CY-454	Applied Electrochemistry
CY-455	Electro-Kinetics Phenomenon
CY-456	Electrochemical Industrial Processes
CY-457	Quantum Chemistry
CY-458	Physical and Electrochemistry Chemistry Lab I
CY-459	Physical and Electrochemistry Chemistry Lab II