



Benha University **Faculty of Science**



Chemistry programs



Benha University **Faculty of** **Science**



BSc. Chemistry programs



Benha University
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Chemistry programs

University Requirements						First Level
University Compulsory Courses: 4 Credit Hours						
First level						
Course Code	Course Title	Theoretical	T/ P	Credit Hours	Prerequisite	
Uni 100	Scientific Thinking	2	-/-	2	-	
Uni 115	English Language (1)	2	-/-		-	
Uni 151	Human Rights and Anticorruption	1	-/-	1	-	
University Requirements						
University Elective Courses: 4 Credit Hours						
First level						
Course Code	Course Title	Theoretical	T/ P	Credit Hours	Prerequisite	
Uni 105	Information Technology	2	-/-	2	-	
Uni 142	History of Science	2	-/-	2	-	
Uni 152	Healthy Nutrition	2	-/-	2	-	
Faculty Requirements						First level Natural
Faculty Compulsory Courses: 88 Credit Hours						
First level						
Course Code	Course Title	Theoretical	T/ P	Credit Hours	Prerequisite	
Bio 101	Biology (1)	1	-/2	2	-	



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Chm 100	General Chemistry (1)	2	2/-	3	-	
Com 101	Introduction to Computer Science	1	-/2	2	-	
Mat 101	Algebra and Geometry	1	2/-	2	-	
Phy 101	Heat and Properties of Matter	2	2/-	3	-	
Bio 102	Biology (2)	1	-/2	2	-	
Chm 105	General Chemistry (2)	2	2/-	3	-	
Com 102	Introduction to Computer Programming	1	-/2	2	-	
Mat 102	Statistics	1	2/-	2	-	
Phy 102	Optics, Electricity and Magnetism	2	2/-	3	-	
Mat 103	Differentiation and Integration	1	2/-	2	-	
Mat 104	Dynamics	1	2/-	2	-	
Faculty Compulsory Courses: 60 Credit Hours						
Course Code	Course Title	Theoretical	T / P	Credit Hours	Prerequisite	Chemistry
Chm 211	Aliphatic Organic Chemistry	2	-/3	3	Chm 105	



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Chm 212	Aromatic and Polynuclear Chemistry	2	-/-	2	Chm 105
Chm 213	Petroleum and Petrochemicals	2	-/-	2	Chm 105
Chm 222	Chemistry of Representative Elements	2	-/3	3	Chm 100
Chm 231	Chemical Thermodynamics	2	-/-	2	Chm 105
Chm 232	Electrochemistry (1)	2	-/-	2	Chm 105
Chm 234	Photo and Kinetic Chemistry	2	-/3	3	Chm 105
Chm 241	Analytical Chemistry (1)	2	-/3	3	Chm 100
Chm 313	Reaction Mechanism and StereoChemistry	2	-/3	3	Chm 212
Chm 314	Chemistry of Carbohydrates, Lipids, Amino Acids and Natural Products (1)	2	-/3	3	Chm 211
Chm 316	Organic Spectroscopy (1)	2	-/3	3	Chm 212
Chm 323	Chemistry of Transition Metals	2	-/-	2	Chm 222
Chm 324	Co-ordination Chemistry	2	-/-	2	Chm 323
Chm 332	Surface Chemistry	2	-/-	2	Chm 222



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Chm 343	Analytical Chemistry (2)	2	-/3	3	Chm 241	
Chm 383	Irreversible Electrochemistry	2	-/-	2	Chm 222	
Chm 411	Polymer Chemistry and Applications (1)	2	-/3	3	Chm 212	
Chm 412	Heterocyclic Chemistry and Applications	2	-/3	3	Chm 212	
Chm 421	Nuclear and Radiation Chemistry	2	-/-	2	Chm 324	
Chm 422	Advanced Inorganic Chemistry (Chemical Applications of Group Theory)	2	-/-	2	Chm 323	
Chm 432	Computational Chemistry and Chemical Applications	2	-/-	2	Chm 439	
Chm 439	Basis of Quantum and Statistical Dynamics Chemistry	2	-/-	2	Chm 222	
Chm 441	Instrumental Analysis (1)	2	-/3	3	Chm 105	
Chm 486	Materials Science (1)	2	-/3	3	Chm 222	
Faculty Elective Courses: 28 Credit Hours						
Course Code	Course Title	Theoretical	T / P	Credit Hours	Prerequisite	
Chm 201	Phase Rule (1)	2	-/-	2	Chm 105	Chemistry



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Chm 216	Organic Environmental Green Chemistry (1)	2	-/-	2	Chm 105
Chm 217	Industrial Chemistry and Economic Studies	2	-/-	2	Chm 105
Chm 221	Industrial Inorganic Chemistry (1)	2	-/-	2	Chm 100
Chm 242	Chemistry of Water Treatment (1)	2	-/-	2	Chm 241
Chm 244	Environmental Analytical Chemistry (1)	2	-/-	2	Chm 241
Chm 310	Advanced Organic Chemistry	2	-/-	2	Chm 212
Chm 312	Therapeutic Chemistry and Vitamins	2	-/3	3	Chm 212
Chm 322	Characterization of Inorganic Compounds	2	-/3	3	Chm 222
Chm 327	Chemistry of Cement and Refractories (1)	2	-/3	3	Chm 222
Chm 331	Applied Electrochemistry	2	-/3	3	Chm 105
Chm 333	Chemistry of Molecular Spectroscopy	2	-/-	2	Chm 222
Chm 335	Electrochemical Instrumental Analysis	2	-/-	2	Chm 241
Chm 342	Analytical Photochemistry	2	-/-	2	Chm 241



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Chm 400	Nanochemistry and Applications	2	-/-	2	Chm 222	
Chm 404	Organometallic Chemistry	2	-/-	2	Chm 324	
Chm 413	Chemistry of Petroleum Additives	2	-/3	3	Chm 313	
Chm 415	Chemistry of Dyes and Textiles	2	-/3	3	Chm 316	
Chm 423	Industrial Inorganic Chemistry (3)	2	-/3	3	Chm 324	
Chm 434	Chemistry of Catalysis Technology	2	-/-	2	Chm 343	
Faculty Free Elective Courses: 6 Credit Hours						
Course Code	Course Title	Theoretical	T / P	Credit Hours	Prerequisite	Chemistry
Mat 201	Ordinary Differential Equations(1)	1	2/-	2	-	
Com 224	Operating Systems	1	2/-	2	-	
Geo 231	Crystallography and Optical Mineralogy (2)	1	-/3	2	-	
Phy 237	Physics of Metals	2	-/-	2	-	
Phy 245	Introduction to Physical Optics	1	-/3	2	-	



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Phy 391	X-ray and Crystallography	2	-/-	2	-	
Mic 359	General Microbiology	1	-/2	2	-	
Faculty Graduation requirements: 6 Credit Hours						
Chm 302	Applied and Field Training	-	-/-	3	--	
Chm 402	Research and Essay	3	-/-	3	--	
Faculty Compulsory Courses: 60 Credit Hours						
Course Code	Course Title	Theoretical	T / P	Credit Hours	Prerequisite	
Chm 211	Aliphatic Organic Chemistry	2	-/3	3	Chm 105	Chemistry and Applied Chemistry
Chm 213	Petroleum and Petrochemicals	2	-/-	2	Chm 105	
Chm 222	Chemistry of Representative Elements	2	-/3	3	Chm 100	
Chm 231	Chemical Thermodynamics	2	-/-	2	Chm 105	
Chm 232	Electrochemistry (1)	2	-/-	2	Chm 105	
Chm 234	Photo and Kinetic Chemistry	2	-/3	3	Chm 105	
Chm 238	Basis of Chemistry of Catalysis Technology	2	-/-	2	Chm 105	
Chm 241	Analytical Chemistry (1)	2	-/3	3	Chm 100	
Chm 313	Reaction Mechanism and StereoChemistry	2	-/3	3	Chm 212	



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Chm 314	Chemistry of Carbohydrates, Lipids, Amino Acids and Natural Products (1)	2	-/3	3	Chm 211
Chm 316	Organic Spectroscopy (1)	2	-/3	3	Chm 212
Chm 323	Chemistry of Transition Metals	2	-/-	2	Chm 222
Chm 324	Co-ordination Chemistry	2	-/-	2	Chm 323
Chm 332	Surface Chemistry	2	-/-	2	Chm 222
Chm 343	Analytical Chemistry (2)	2	-/3	3	Chm 241
Chm 369	Basis of Polymer Chemistry	1	-/3	2	Chm 211
Chm 410	Chemotherapy and Heteroorganic Chemistry	2	-/-	2	Chm 316
Chm 414	Technology of Industrial Detergents	2	-/3	3	Chm 316
Chm 421	Nuclear and Radiation Chemistry	2	-/-	2	Chm 324
Chm 424	Chemistry of Lanthanides and Actinides (2)	2	-/-	2	Chm 222
Chm 429	Chemistry of Cement and Refractories (2)	2	-/3	3	Chm 324
Chm 439	Basis of Quantum and Statistical Dynamics Chemistry	2	-/-	2	Chm 222
Chm 441	Instrumental Analysis (1)	2	-/3	3	Chm 105
Chm 486	Materials Science (1)	2	-/3	3	Chm 222
Faculty Elective Courses: 28 Credit Hours					



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Course Code	Course Title	Theoretical	T / P	Credit Hours	Prerequisite	Chemistry and Applied Chemistry
Chm 216	Organic Environmental Green Chemistry (1)	2	-/-	2	Chm 105	
Chm 217	Industrial Chemistry and Economic Studies	2	-/-	2	Chm 105	
Chm 219	Cyclic Aliphatic Chemistry	2	-/-	2	Chm 105	
Chm 221	Industrial Inorganic Chemistry (1)	2	-/-	2	Chm 100	
Chm 242	Chemistry of Water Treatment (1)	2	-/-	2	Chm 241	
Chm 292	Phase Rule (2)	2	-/-	2	Chm 105	
Chm 311	Chemistry of Pesticides and Toxins	2	-/3	3	Chm 211	
Chm 318	Applied Organic Chemistry (Selected Topics)	3	-/-	3	Chm 212	
Chm 320	Chemistry of Ceramics Industry	2	-/-	2	Chm 222	
Chm 321	Industrial Inorganic Chemistry (2)	2	-/3	3	Chm 222	
Chm 325	Applied RadioChemistry	2	-/-	2	Chm 222	
Chm 326	Chemistry of Inorganic Pigments	2	-/3	3	Chm 222	
Chm 335	Electrochemical Instrumental Analysis	2	-/-	2	Chm 241	
Chm 336	Chemistry of Glass Industry	2	-/-	2	Chm 323	
Chm 400	Nanochemistry and Applications	2	-/-	2	Chm 222	



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Chm 413	Chemistry of Petroleum Additives	2	-/3	3	Chm 313	
Chm 415	Chemistry of Dyes and Textiles	2	-/3	3	Chm 313	
Chm 416	Technology of Paints	2	-/-	2	Chm 314	
Chm 417	Advanced Polymer Chemistry	2	-/3	3	Chm 314	
Chm 434	Chemistry of Catalysis Technology	2	-/-	2	Chm 343	
Chm 437	Chemistry of Corrosion and Metal Protecting	2	-/3	3	Chm 313	
Faculty Free Elective Courses: 6 Credit Hours						
Course Code	Course Title	Theoretical	T / P	Credit Hours	Prerequisite	Chemistry and Applied Chemistry
Mat 201	Ordinary Differential Equations (1)	1	2/-	2	-	
Com 224	Operating Systems	1	2/-	2	-	
Geo 231	Crystallography and Optical Mineralogy (2)	1	-/3	2	-	
Phy 237	Physics of Metals	2	-/-	2	-	
Phy 245	Introduction to Physical Optics	1	-/3	2	-	
Phy 391	X-ray and Crystallography	2	-/-	2	-	
Mic 359	General Microbiology	1	-/2	2	-	
Faculty Graduation requirements: 6 Credit Hours						



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Chm 302	Applied and Field Training	-	-/-	3	-	
Chm 402	Research and Essay	3	-/-	3	-	
Faculty Compulsory Courses: 60 Credit Hours						
Course Code	Course Title	Theoretical	T / P	Credit Hours	Prerequisite	
Chm 211	Aliphatic Organic Chemistry	2	-/3	3	Chm 105	Chemistry and Radiochemistry
Chm 212	Aromatic and Polynuclear Chemistry	2	-/-	2	Chm 105	
Chm 213	Petroleum and Petrochemicals	2	-/-	2	Chm 105	
Chm 222	Chemistry of Representative Elements	2	-/3	3	Chm 100	
Chm 231	Chemical Thermodynamics	2	-/-	2	Chm 105	
Chm 234	Photo and Kinetic Chemistry	2	-/3	3	Chm 105	
Chm 241	Analytical Chemistry (1)	2	-/3	3	Chm 100	
Chm 242	Chemistry of Water Treatment (1)	2	-/-	2	Chm 241	
Chm 313	Reaction Mechanism and StereoChemistry	2	-/3	3	Chm 212	
Chm 328	Transition Elements and Complexes	2	-/-	2	Chm 222	



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Chm 343	Analytical Chemistry (2)	2	-/3	3	Chm 241
Chm 350	Radiation Protection	2	-/-	2	Chm 222
Chm 352	Nuclear Reactions	2	-/-	2	Chm 222
Chm 353	Radioactivity and Properties of Nucleus	2	-/-	2	Chm 222
Chm356	Nuclear Analysis Methods	2	-/-	2	Chm 222
Chm 357	Radioactive Decay	2	-/-	2	Chm 222
Chm 372	Chemistry of Lanthanides and Actinides (1)	2	-/-	2	Chm 328
Chm 439	Basis of Quantum and Statistical Dynamics Chemistry	2	-/-	2	Chm 222
Chm 451	Production of Radionuclides	2	-/-	2	Chm 352
Chm 452	High-Energy Particles	2	-/-	2	Chm 451
Chm 453	Radiation Technology	2	-/-	2	Chm 352
Chm 454	Radioisotope Separation	2	-/-	2	Chm 451
Chm 455	Nuclear Reactors	2	-/-	2	Chm 352



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Chm 456	RadioChemistry, Environment, and Applications	2	-/-	2	Chm 451	
Chm 457	Nuclear Fuel Cycle	2	-/-	2	Chm 352	
Chm 458	Treatment of Radioactive Wastes	2	-/-	2	Chm 451	
Chm 474	Chemistry of Super Heavy Elements	2	-/-	2	Chm 451	
Faculty Elective Courses: 28 Credit Hours						
Course Code	Course Title	Theoretical	T / P	Credit Hours	Prerequisite	
Chm 216	Organic Environmental Green Chemistry (1)	2	-/-	2	Chm 105	Chemistry and Radiochemistry
Chm 217	Industrial Chemistry and Economic Studies	2	-/-	2	Chm 105	
Chm 221	Industrial Inorganic Chemistry (1)	2	-/-	2	Chm 100	
Chm 233	Principle of Electrochemistry	2	-/-	2	Chm 105	
Chm 236	Thermodynamic of Solutions	2	-/-	2	Chm 105	
Chm 244	Environmental Analytical Chemistry (1)	2	-/-	2	Chm 241	
Chm 311	Chemistry of Pesticides and Toxins	2	-/3	3	Chm 211	



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Chm 329	Technetium Chemistry and Applications	2	-/-	2	Chm 222
Chm 332	Surface Chemistry	2	-/-	2	Chm 222
Chm333	Chemistry of Molecular Spectroscopy	2	-/-	2	Chm 222
Chm 337	Materials Science (2)	2	-/3	3	Chm 222
Chm 342	Analytical Photochemistry	2	-/-	2	Chm 241
Chm 354	Radionuclide Standardization	2	-/3	3	Chm 353
Chm 362	Organic Spectroscopy (2)	2	-/3	3	Chm 313
Chm 400	Nanochemistry and Applications	2	-/-	2	Chm 222
Chm 418	Technology of Paints and Detergents	2	-/-	2	Chm 313
Chm 427	Forensic Chemistry	2	-/3	3	Chm 313
Chm 430	Electrochemistry (2)	3	-/-	3	Chm 232
Chm 434	Chemistry of Catalysis Technology	2	-/-	2	Chm 343
Chm 437	Chemistry of Corrosion and Metal Protecting	2	-/3	3	Chm 313



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Faculty Free Elective Courses: 6 Credit Hours					
Course Code	Course Title	Theoretical	T / P	Credit Hours	Prerequisite
Mat 201	Ordinary Differential Equations (1)	1	2/-	2	-
Com 224	Operating Systems	1	2/-	2	-
Geo 231	Crystallography and Optical Mineralogy (2)	1	-/3	2	-
Phy 237	Physics of Metals	2	-/-	2	-
Phy 245	Introduction to Physical Optics	1	-/3	2	-
Phy 391	X-ray and Crystallography	2	-/-	2	-
Mic 359	General Microbiology	1	-/2	2	-
Faculty Graduation requirements: 6 Credit Hours					
Chm 302	Applied and Field Training	-	-/-	3	--
Chm 402	Research and Essay	3	-/-	3	--

Chemistry and Radiochemistry