



Developed Study Plan for the Doctor of Philosophy (PhD) Program in Chemistry (44 Hours)

First Year

First level			
Code	Course Name	Hr	Required / Elective
7121CHEM	Advanced Physical Organic Chemistry	3	R
7221CHEM	Advanced Topics in Inorganic Chemistry	3	R
7321CHEM	Advanced Topics in Physical Chemistry	3	R
7421CHEM	Advanced Topics in Analytical Chemistry	3	R
Total		12	

Second level			
Code	Course Name	Hr	Required / Elective
****CHEM	Elective Course 1	3	E
****CHEM	Elective Course 2	3	E
****CHEM	Elective Course 3	3	E
Total		9	

Second Year

Third level			
Code	Course Name	Hr	Required / Elective
****CHEM	Elective Course 4	3	E
****CHEM	Elective Course 5	3	E
****CHEM	Special Topics	3	E
Total		9	

Forth level			
Code	Course Name	Hr	Required / Elective
7020CHEM	Ph.D. Dissertation	12	R
7021CHEM	Seminar	2	R
Total		14	

Third Year

Third level			
Code	Course Name	Hr	Required / Elective
7020CHEM	Ph.D. Dissertation	-	R

Forth level			
Code	Course Name	Hr	Required / Elective
7020CHEM	Ph.D. Dissertation	-	R

List of Elective Courses by Specialization

Spec.	Code	Course Name	H	Spec.	Code	Course Name	H
Organic	7102CHEM	Spectroscopic Identification of Organic Compounds	3	Inorganic	7222CHEM	Synthesis of Inorganic Materials	3
	7123CHEM	Advanced Organic Chemistry Syntheses	3		7223CHEM	Advanced Materials Sciences	3
	7124CHEM	Green Chemistry	3		7224CHEM	Advanced Applications of Group Theory	3
	7125CHEM	Advanced Organic Materials and Functional Dyes	3		7225CHEM	Advanced Inorganic Reaction Mechanisms	3
	7126CHEM	Advanced Heterocyclic Chemistry	3		7226CHEM	Water Resources and Treatment	3
	7107CHEM	Polymer Chemistry	3		7207CHEM	Bioinorganic Chemistry	3
	7108CHEM	Bioorganic Chemistry	3		7208CHEM	Industrial Inorganic Chemistry	3
	7109CHEM	Advanced Organometallic and Organic Chemistry	3		7209CHEM	Crystallography	3
	7110CHEM	Natural Products Chemistry	3		7210CHEM	Advanced Organometallic and Inorganic Chemistry	3
	7111CHEM	Computational Organic Chemistry	3		7211CHEM	Advanced Radiochemistry and Nuclear Chemistry	3
Spec.	Code	Course Name	H	Spec.	Code	Course Name	H
Physical	7322CHEM	Quantum Chemistry and Structure	3	Analytical	7422CHEM	Advanced Separation Techniques	3
	7323CHEM	Chemical Kinetics and Reaction Dynamics	3		7423CHEM	Advanced Spectroscopic Techniques	3
	7304CHEM	Statistical Thermodynamics	3		7424CHEM	Sample Preparation Techniques	3
	7325CHEM	Artificial Intelligence in Chemistry	3		7425CHEM	Advanced Electroanalytical Chemistry	3
	7326CHEM	Advanced Electrochemistry	3		7426CHEM	Advanced Biochemical Analysis	3
	7307CHEM	Surface and Solution Chemistry	3		7407CHEM	Advanced Pharmaceutical Chemical Analysis	3
	7308CHEM	Advanced Catalysis and Sustainability	3		7408CHEM	Statistical Analysis and Data Interpretation	3
	7309CHEM	Molecular Spectroscopy	3		7409CHEM	Advanced Environmental Chemical Analysis	3
	7310CHEM	Drug Design and Discovery	3		7410CHEM	Advanced Forensic Chemical Analysis	3
	7311CHEM	Sustainable Energy and Its Applications	3		7411CHEM	Green Analytical Chemistry	3

List of Special Topics Courses

Code	Course Name	H
7112CHEM	Special Topics in Nuclear Magnetic Resonance Techniques	3
7113CHEM	Special Topics in Mass Spectrometry	3
7212CHEM	Special Topics in Materials Preparation Methods	3
7213CHEM	Special Topics in Materials characterization	3
7312CHEM	Special Topics in Advanced Computational Chemistry	3
7313CHEM	Special Topics in Physical Properties of Materials	3
7412CHEM	Special Topics in Separation Methods	3
7413CHEM	Special Topics in Quantitative Spectroscopy	3

List of Complementary Courses

Code	Course Name	H
7100CHEM	Selected Topics in Organic Chemistry	3
7200CHEM	Selected Topics in Inorganic Chemistry	3
7300CHEM	Selected Topics in Physical Chemistry	3
7400CHEM	Selected Topics in Analytical Chemistry	3

[For detailed course specifications, click here.](#)