



Old Study Plan for the Doctor of Philosophy (PhD) Program in Chemistry

First Year

First Year/First Level				
Code	Course title	Required /Elective	Credit Hr	Contact Hr
7000CHEM	Laboratory Safety	R	0	1
7001CHEM	Ethics of Scientific Research	R	0	1
7003CHEM	Chemistry Literature	R	0	1
7004CHEM	Research Rotation 1	R	0	3
7008CHEM	Chemistry Teaching	R	0	1
****CHEM	Elective Specialization Course 1	E	3	3
****CHEM	Elective Specialization Course 2	E	3	3

First Year/Second Level				
Code	Course title	Required /Elective	Credit Hr	Contact Hr
7005CHEM	Research Rotation 2	R	0	3
7501CHEM	Departmental Seminar 1	R	0	1
7511CHEM	Major Field Seminar 1	R	0	1
****CHEM	Elective Specialization Course 3	E	3	3
****CHEM	Elective Specialization Course 4	E	3	3

Second Year

Second Year/Third Level				
Code	Course title	Required /Elective	Credit Hr	Contact Hr
7006CHEM	Advanced Scientific Communication	R	0	1
7506CHEM	Departmental Seminar 2	R	0	1
7512CHEM	Major Field Seminar 2	R	0	1
7521CHEM	Research Group Seminar 1	R	0	1
7601CHEM	Pre-Dissertation Research 1	R	0	3
****CHEM	Elective Specialization Course 5	E	3	3
****CHEM	Elective Specialization Course 6	E	3	3

Second Year/Forth Level				
Code	Course title	Required /Elective	Credit Hr	Contact Hr
7007CHEM	Original Research Proposal	R	0	1
7507CHEM	Departmental Seminar 3	R	0	1
7513CHEM	Major Field Seminar 3	R	0	1
7522CHEM	Research Group Seminar 2	R	0	1
7531CHEM	Graduation Research Seminar 1	R	0	1
7602CHEM	Pre-Dissertation Research 2	R	0	3
7600CHEM	Ph.D. Dissertation	R	21	21
****CHEM	Elective Specialization Course 7	E	3	3

Third Year

Third Year/Fifth Level				
Code	Course title	Required /Elective	Credit Hr	Contact Hr
7508CHEM	Departmental Seminar 4	R	0	1
7514CHEM	Major Field Seminar 4	R	0	1
7523CHEM	Research Group Seminar 3	R	0	1
7532CHEM	Graduation Research Seminar 2	R	0	1
****CHEM	Applied Course 1	E	0	3

Third Year/Sixth Level				
Code	Course title	Required /Elective	Credit Hr	Contact Hr
7505CHEM	Departmental Seminar 5	R	0	1
7515CHEM	Major Field Seminar 5	R	0	1
7524CHEM	Research Group Seminar 4	R	0	1
****CHEM	Applied Course 2	E	0	3

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

Elective Specialization Courses

Elective Specialization Courses in Organic Chemistry

Code	Course title	Required/ Elective	Credit H	Contact H
7101CHEM	Physical Organic Chemistry	E	3	3
7102CHEM	Spectroscopic Organic Structure Determination	E	3	3
7103CHEM	Advanced Organic Chemistry I	E	3	3
7104CHEM	Advanced Organic Chemistry II	E	3	3
7105CHEM	Advanced Synthesis in Chemistry	E	3	3
7106CHEM	Selected Topics in Organic Chemistry	E	3	3

Elective Specialization Courses in Inorganic Chemistry

Code	Course title	Required/ Elective	Credit H	Contact H
7201CHEM	Advanced Inorganic Chemistry I	E	3	3
7202CHEM	Advanced Inorganic Chemistry II	E	3	3
7203CHEM	Inorganic Chemistry Synthesis	E	3	3
7204CHEM	Advanced Radiation and Nuclear Chemistry	E	3	3
7205CHEM	Advanced Applications in Group Theory	E	3	3
7206CHEM	Selected Topics in Inorganic Chemistry	E	3	3

Elective Specialization Courses in Physical Chemistry

Code	Course title	Required/ Elective	Credit H	Contact H
7301CHEM	Quantum, Structure and Dynamics I	E	3	3
7302CHEM	Chemical Thermodynamics	E	3	3
7303CHEM	Chemical Kinetics and Reaction Dynamics	E	3	3
7304CHEM	Statistical Thermodynamics	E	3	3
7305CHEM	Quantum, Structure and Dynamics II	E	3	3
7306CHEM	Selected Topics in Physical Chemistry	E	3	3

Elective Specialization Courses in Analytical Chemistry

Code	Course title	Required/ Elective	Credit H	Contact H
7401CHEM	Separation Techniques	E	3	3
7402CHEM	Spectroscopic Analytical Techniques	E	3	3
7403CHEM	Environmental Analytical Chemistry	E	3	3
7404CHEM	Advanced Electroanalytical Chemistry	E	3	3
7405CHEM	Bioanalytical Chemistry	E	3	3
7406CHEM	Selected Topics in Analytical Chemistry	E	3	3

Applied Courses

Code	Course title	Required/ Elective	Credit H	Contact H
7008CHEM	Applied Physical Methods of Inorganic Chemistry	E	0	3
7009CHEM	Applied Separation Techniques	E	0	3
7010CHEM	Applied NMR Techniques	E	0	3
7011CHEM	Applied Statistical and Data Analyses	E	0	3
7012CHEM	Applied Physical Methods in Material Chemistry	E	0	3
7013CHEM	Applied Mathematics in Physical Chemistry	E	0	3
7014CHEM	Applied X-Ray Structure Determination	E	0	
7015CHEM	Applied Mass Spectroscopy	E	0	
7016CHEM	Applied Spectroscopic Methods of Structure Determination	E	0	
7017CHEM	Applied Quantitative Methods of Computational Chemistry	E	0	

Complementary Courses

Code	Course title	Required/ Elective	Credit H	Contact H
7100CHEM	Special Topics in Organic Chemistry	E	0	3
7200CHEM	Special Topics in Inorganic Chemistry	E	0	3
7300CHEM	Special Topics in Physical Chemistry	E	0	3
7400CHEM	Special Topics in Analytical Chemistry	E	0	3