

Course Descriptions

Course Number and Symbol	CHEM 620		
Course Title	Advanced Inorganic Chemistry		
Credit Hours	2(2+0)	Level	first
Metal-metal single and multiple bonds. Transition metals hybrids, electron deficient compounds, lanthanides and actinides.			

Course Number and Symbol	CHEM 621		
Course Title	Inorganic Chemistry. Theory & Application		
Credit Hours	2(2+0)	Level	first
Spectroscopic applications of quantum chemistry and group theory, theoretical aspects of solid state chemistry and application in semi- and super-conductors and chemical industries.			

Course Number and Symbol	CHEM 622		
Course Title	Structural Elucidation by Instrumental methods.		
Credit Hours	2(2+0)	Level	first
Single crystal x-ray diffraction, I.R. and Raman Spectroscopy, NMR spectroscopy, Magnetic susceptibility, ESR and Mössbauer spectroscopy.			

Course Number and Symbol	CHEM 623		
Course Title	Selected Topics in Inorganic Chemistry.		
Credit Hours	2(2+0)	Level	first
a) Bioinorganic chemistry b) Recent advances in organometallic chemistry c) Kinetics and mechanisms of inorganic reactions.			

Course Number and Symbol	CHEM 660		
Course Title	Seminar		
Credit Hours	2(2+0)	Level	First
A literature review of one of the topics suggested by the staff members. The student should present a talk on the topic after reviewing the literature and preparing a written article. The staff member would then evaluate the student accordingly.			

Course Number and Symbol	CHEM 630		
Course Title	Applied Physical Chemistry		
Credit Hours	3(3+0)	Level	Second
Thermodynamics, chemical kinetics, nuclear and radiation chemistry, chromatography, photochemistry, chemistry of surface and colloids.			

Course Number and Symbol	CHEM 631		
Course Title	Chemical Physics		
Credit Hours	3(3+0)	Level	Second
Basic techniques being used to solve many chemical Problems which includes : Spectroscopy, mass spectroscopy, molecular beams, statistical mechanics...etc.			

Course Number and Symbol	CHEM 632		
Course Title	Physical Methods in Material Analysis.		
Credit Hours	3(3+0)	Level	Second
Methods of Physical analysis of materials and its interpretations, e.g. thermal analysis, particulate characterization, X-ray , electronic microscopes...etc.			

Course Number and Symbol	CHEM 633		
Course Title	Selected Topics in Physical Chemistry		
Credit Hours	3(3+0)	Level	Second
Students are required to achieve a comprehensive study about the subject expected to specialize in among physical chemistry branches, e.g. Physical chemistry of polymers, laser, electrochemistry..... etc.			

Course Number and Symbol	CHEM 640		
Course Title	Advanced Organic Synthesis		
Credit Hours	3(3+0)	Level	Second
Oxidation-reduction reactions. Application of modern synthetic reactions in C-C bond and multi step organic synthesis.			

Course Number and Symbol	CHEM 641		
Course Title	Advanced Natural Products		
Credit Hours	3(3+0)	Level	Second
Advanced studies in the preparation and separation of natural products.			

Course Number and Symbol	CHEM 642		
Course Title	Physical Organic Chemistry		
Credit Hours	3(3+0)	Level	Second
Stereochemistry, linear Gibbs energy relation, thermo chemistry, solutions, kinetics and mechanism, interpretation of rate constant, application of the per cyclic selection rule, photochemistry			

Course Number and Symbol	CHEM 643		
Course Title	Selected Topics in Organic Chemistry		
Credit Hours	3(3+0)	Level	Second
<ol style="list-style-type: none"> 1. Asymmetric catalysis in organic synthesis. 2. Advanced techniques in polymer. 3. Application of nano-materials. 4. Application of surfactant. 5. Peptide technology: Synthesis and applications. 			

Course Number and Symbol	CHEM 650		
Course Title	Various Topics in Analytical Chemistry		
Credit Hours	3(3+0)	Level	Second
Advanced studies in chemical equilibria, new chemical (non-instrumental) methods of analysis, statistical evaluation of analytical data.			

Course Number and Symbol	CHEM 651		
Course Title	Advanced Studies in Instrumental Analysis		
Credit Hours	3(3+0)	Level	Second
Studies in the new concepts of various instrumental methods of analysis such as electro analytical, spectrophotometric and chromatographic methods of analysis.			

Course Number and Symbol	CHEM 652		
Course Title	Applied Analytical Chemistry		
Credit Hours	3(3+0)	Level	Second
The use of computer in analytical chemistry, various studies in the general applications of analytical chemistry.			

Course Number and Symbol	CHEM 630		
Course Title	Selected Topics in Analytical Chemistry		
Credit Hours	2(2+0)	Level	Second

A comprehensive study of specialized subject among analytical chemistry. i.e. electroanalysis, spectrophotometric analysis, chromatographyetc.

Course Number and Symbol	CHEM 700		
Course Title	Comprehensive exam		
Credit Hours	Pass/Fail	Level	Third
The student must pass the comprehensive exam which is need to get the degree.			

Course Number and Symbol	CHEM 700		
Course Title	Supervision		
Credit Hours	12	Level	Fourth
Student perform research in one of the chemistry areas under the supervision of one of the department's staff according to the higher education and KSU regulations. The supervisor will be assigned by the department council based on the subject of the thesis project. The student has to defend his thesis at the end of the research project.			