

**KARABÜK ÜNİVERSİTESİ**  
**LİSANSÜSTÜ EĞİTİM ENSTİTÜSÜ**

<b>DEPARTMENT OF CHEMISTRY</b>					
<b>Content of Master's Degree in Chemistry</b>					
<b>COURSE CODE</b>	<b>COURSE NAME AND CONTENTS</b>	<b>T</b>	<b>A</b>	<b>C</b>	<b>ECTS</b>
<b>KIM744</b>	<b>Current Developments in Biochemistry</b>	<b>3</b>	<b>0</b>	<b>3</b>	<b>8</b>
<b>Purpose and Content</b>	The aim of the course is to be able to follow current issues in the field of biochemistry, to gain information about planning multidisciplinary studies, to gain basic information about preparing publications. Basic biochemistry subjects, current research areas in biochemistry, relationship of biochemistry with other disciplines, literature review on biochemistry, converting data obtained from studies into articles.				
<b>KIM746</b>	<b>Corrosion Chemistry</b>	<b>3</b>	<b>0</b>	<b>3</b>	<b>8</b>
<b>Purpose and Content</b>	To understand the importance of corrosion and to develop the awareness of how to take the precautions of the damages in various materials as a result of corrosion. Corrosion definition, hazard and intensity, classification, kinetics and thermodynamics of the corrosion process, mechanism, in various environments, corrosion, corrosion inhibitors, prevention methods.				
<b>KIM748</b>	<b>Thermodynamics in Polymer Solutions</b>	<b>3</b>	<b>0</b>	<b>3</b>	<b>8</b>
<b>Purpose and Content</b>	Giving fundamentals about thermodynamics of polymer solutions and some theories, determination of solubility of a polymer and polymer-polymer mixtures , knowledge of different kind of techniques. 1) Basic concepts of polymer science 2) Polymer solutions 2)a) polymer structure and solubility 2)b) solubility parameter 2.c)Determination methods of solubility parameter 3) Thermodynamics of basic liquid mixtures 3)a) Ideal solutions 3)b) 3)b) Nonideal solutions 4) Polymer-solvent interactions 4)a) Long range interaction 4)b) Short range interaction 5) Description of polymer-solvent interaction parameter and theoretical statement of thermodynamic parameters for polymer-solvent systems 5)a) Flory-Huggins theory 5)b) Flory- Krigbaum theory 5)5)c) Free volume theory 6) Determination with experimental methods of X 6)a) Osmotic pressure 6)b)Vapour sorption 6)c)Viscosity 6)d) Inverse gas chromatography 7) Melting thermodynamic of polymer 8) Polymer-polymer mixtures 8)a) Preparation methods of miscible mixtures 8)b) Investigation of miscibility and phase diagrams 8)b)1) Qualitative methods 8)b)2) Quantitative methods 8)b)3) Description of polymer-polymer interaction parameter X23 and determination by inverse gas chromatography method.				
<b>KIM743</b>	<b>Plastics Recycling</b>	<b>3</b>	<b>0</b>	<b>3</b>	<b>8</b>

**Bu belge, güvenli elektronik imza ile imzalanmıştır.**

Belge Doğrulama Kodu: BSMNAYUKLBelge Doğrulama Adresi : <https://turkiye.gov.tr/ebd?eK=4043&eD=BSMNAYUKL&eS=303253>



**KARABÜK ÜNİVERSİTESİ**  
**LİSANSÜSTÜ EĞİTİM ENSTİTÜSÜ**

<b>Purpose and Content</b>	The objective of this course is to produce energy and other products from plastic waste by physical, chemical and biochemical methods. Reasons of the plastics recycling, terminology, recycling methods, coding and labeling organizations of plastics recycling, collection of plastic wastes and collection systems, sorting and separations methods, size reduction methods, examples: PET (mechanical and chemical recycling), PVC (mechanical and chemical recycling), EPS (mechanical and chemical recycling), nylon (mechanical and chemical recycling), incineration, incineration systems (incinerator), incineration processes, emissions and solid wastes.
<b>KIM703</b>	<b>UV-Visible Spectroscopy</b> <b>3</b> <b>0</b> <b>3</b> <b>8</b>
<b>Purpose and Content</b>	To explain of UV-Vis spectrum of coordination complexes. Lambert-Beer Law, deviation of Lamber-Beer Law, electromagnetic spectrum, molecules undergo electronic transitions, UV-Vis Lüminesans Spectroscopy, UV-Vis Absorption spectrophotometers, UV-Vis Spectra of transition metal complexes, Charge Transfer Bands, Term of Spektroskopik.
<b>KIM704</b>	<b>Advanced Organic Chemistry I</b> <b>3</b> <b>0</b> <b>3</b> <b>8</b>
<b>Purpose and Content</b>	To ability characterize the structure and find out the relationship of organic compounds. Localized Chemical Bonds; Delocalized Chemical Bonds; Bonds Weaker Than Covalent Bonds; Stereochemistry; Carbocations, Carbanions, Free Radicals, Carbenes and Nitrenes; Organic Acids And Bases; Effect of Structure on Reactivity.
<b>KIM705</b>	<b>Advanced Organic Chemistry II</b> <b>3</b> <b>0</b> <b>3</b> <b>8</b>
<b>Purpose and Content</b>	To learn characterize the structure and find out the relationship of organic compounds. Students will get advanced organic chemistry in order to have information the chemical compounds and the relationship between than.
<b>KIM706</b>	<b>Advanced Coordination Chemistry</b> <b>3</b> <b>0</b> <b>3</b> <b>8</b>
<b>Purpose and Content</b>	Overiev of Coordination Chemistry and information of d and f-blok chemistry. D-block chemistry and characteristic properties. Typical ligands; nomenclature, coordination numbers. Isomerism of coordination compounds. Bonding in transition metal compounds valence bond theory, crystal field theory, magnetic properties of transition metal complexes, molecular orbital theory, electronic spectra of transition metal complexes, tanabe-sugano diagrams, preparation of coordination compounds; thermodynamic and related aspects of coordination compounds, reaction kinetics of coordination compounds.
<b>KIM720</b>	<b>Syntheses Via Carbonyles Directly</b> <b>3</b> <b>0</b> <b>3</b> <b>8</b>
<b>Purpose and Content</b>	To learn the chemical structures and synthesis of carbonyl compounds. To provide a basis for carbonyl compounds.

**Bu belge, güvenli elektronik imza ile imzalanmıştır.**

Belge Doğrulama Kodu: BSMNAYUKLBelge Doğrulama Adresi : <https://turkiye.gov.tr/ebd?eK=4043&eD=BSMNAYUKL&eS=303253>



**KARABÜK ÜNİVERSİTESİ**  
**LİSANSÜSTÜ EĞİTİM ENSTİTÜSÜ**

<b>KIM707</b>	<b>Inorganic Reaction Mechanism</b>	<b>3</b>	<b>0</b>	<b>3</b>	<b>8</b>
<b>Purpose and Content</b>	Investigate of the reaction mechanism of the coordination compounds. Stability, inert. Thermodynamics stability, Kinetic stability, Translocation reactions, stoichiometry mechanism, electron transfer reactions and their mechanism.				
<b>KIM721</b>	<b>Organic Reaction and Mechanism</b>	<b>3</b>	<b>0</b>	<b>3</b>	<b>8</b>
<b>Purpose and Content</b>	To give the relationship between the reaction mechanisms and structures and reaction conditions. Introduction to stereochemistry, active particles, aliphatic nucleophilic substitution reactions, aromatic electrophilic substitution reactions, aromatic nucleophilic substitution reactions, free radical substitutions, additions to carbon-carbon and carbon-heteroatom folded bonds, dissociation reactions, conversion reactions, pericyclic reactions.				
<b>KIM708</b>	<b>Molecular Symmetry and Group Theory</b>	<b>3</b>	<b>0</b>	<b>3</b>	<b>8</b>
<b>Purpose and Content</b>	Molecular symmetry and its chemical application. Symmetry elements, symmetry operations, point groups, groups theory, common point groups, representation, character tables, molecular symmetry is a fundamental concept in chemistry, as it can predict or explain many of a molecule's chemical properties, such as its dipole moment and its allowed spectroscopic transition.				
<b>KIM722</b>	<b>Azolides</b>	<b>3</b>	<b>0</b>	<b>3</b>	<b>8</b>
<b>Purpose and Content</b>	To learn the chemical structures, reactivity and synthesis of azolides. To provide a basis for azolides.				
<b>KIM723</b>	<b>Scientific Research Methods</b>	<b>3</b>	<b>0</b>	<b>3</b>	<b>8</b>
<b>Purpose and Content</b>	To introduce scientific research methods, to give knowledge about the steps of a research project and how to run and bring it to conclusion, about preparing the results to presentation and publication. Scientific research process, research methods, data obtaining methods, chemical literature survey, preparation and evaluation of experimental data, format and content in the presentation of results (report, article, dissertation), scientific article writing techniques.				
<b>KIM709</b>	<b>Biodegradable Polymers I</b>	<b>3</b>	<b>0</b>	<b>3</b>	<b>8</b>

**Bu belge, güvenli elektronik imza ile imzalanmıştır.**

Belge Doğrulama Kodu: BSMNAYUKLBelge Doğrulama Adresi : <https://turkiye.gov.tr/ebd?eK=4043&eD=BSMNAYUKL&eS=303253>



**KARABÜK ÜNİVERSİTESİ**  
**LİSANSÜSTÜ EĞİTİM ENSTİTÜSÜ**

<b>Purpose and Content</b>	Introduction to industrial polymers and their plastic products aging in a long period in nature. Focus on waste pollution and try to find out solutions to waste and environmental pollution problems due to such kind of polymeric materials. Introduce biodegradable polymers and plastics as an alternative to industrial plastic substances. Degradation mechanisms of polymers, modification of natural polymers and their applications, synthesis of synthetic biodegradable polymers, their modification, industrial applications of biodegradable polymers, medicinal applications of biodegradable polymers.				
<b>KIM710</b>	<b>Biodegradable Polymers II</b>	<b>3</b>	<b>0</b>	<b>3</b>	<b>8</b>
<b>Purpose and Content</b>	To study natural and synthetic biodegradable polymers and their biodegradation mechanisms in nature, to give knowledge about polyhydroxyalkanoates, their synthesis, modifications, structure determination and their industrial and medicine applications. Polyhydroxyalkanoates, synthesis of polyhydroxyalkanoates, modifications of polyhydroxyalkanoates, identification of chemical structures of polyhydroxyalkanoates, industrial applications of polyhydroxyalkanoates, pharmacological and medicinal applications of polyhydroxyalkanoates.				
<b>KIM724</b>	<b>Ionic Liquids In Synthesis and Properties</b>	<b>3</b>	<b>0</b>	<b>3</b>	<b>8</b>
<b>Purpose and Content</b>	To explain the chemical structures, reactivity and synthesis of ionic liquids. What are ionic Liquids and their fields of study? Synthesis and Purification of Ionic Liquids. Physicochemical Properties of Ionic Liquids. Molecular Structure and Dynamics. Organic Synthesis. Inorganic Synthesis.				
<b>KIM711</b>	<b>Reactive Groups Containig Monomers and Polymers I</b>	<b>3</b>	<b>0</b>	<b>3</b>	<b>8</b>
<b>Purpose and Content</b>	Introduce all kinds of reactive group containing monomers and their resulting polymers, theoretical structure analyses of these polymers. Polymeric Catalysis; metal polymer complexes and their synthesis, synthesis of coordination polymers, models for metalloenzymes, nonenzymatic catalytic activities of macromolecule-metal complexes; oxidation, reduction, polymerization, photoreaction, photoresponsive polymers; electrically conducting polymers and their applications as functional materials; p-conjugated oligomers, applications electrically conducting polymers; rechargeable batteries, photovoltaic devices, magnetic polymers; classification magnetism, oxygen-carrying and oxygene permeating polymers; Polymer membranes for oxygen permeation; hemoglobin membrane, inclusion complexes of polymers, inclusion polymerization; asymmetric polymerization, evaluation of biological activity, a novel biomaterial; aramid-silicone resin, polymeric materials for second order nonlinear optical applications, polymer systems.				
<b>KIM725</b>	<b>Atomic Absorption and Emission</b>	<b>3</b>	<b>0</b>	<b>3</b>	<b>8</b>

**Bu belge, güvenli elektronik imza ile imzalanmıştır.**

Belge Doğrulama Kodu: BSMNAYUKLBelge Doğrulama Adresi : <https://turkiye.gov.tr/ebd?eK=4043&eD=BSMNAYUKL&eS=303253>



**KARABÜK ÜNİVERSİTESİ**  
**LİSANSÜSTÜ EĞİTİM ENSTİTÜSÜ**

<b>Purpose and Content</b>	To learn the basic theory atomic spectroscopy, instrumentation, techniques, and the application of various analytical atomic spectrometric methods.Theory of Atomic Spectroscopy, Atomic Absorption Spectrometry, Flame Atomic Emission Spectrometry, Plasma Atomic Emission Spectrometry, Inductively Coupled Plasma Mass Spectrometry, Atomic Fluorescence Spectrometry, Sample Preparation, Advantages and Mutual Comparison of Atomic Spectrometric Methods.				
<b>KIM726</b>	<b>Energy Technologies</b>	<b>3</b>	<b>0</b>	<b>3</b>	<b>8</b>
<b>Purpose and Content</b>	The main objective of this course is to give information about the types of energy and methods of gaining energy,and impact on the environment. Definition and classification of energy, Introduction and classification of energy sources, Fossil fuels (coal, petroleum and natural gas), Production of fossil fuels, Process and use of fossil fuels, The effect of fossil fuels on the environment, Nuclear energy and the environment, Process and use of nuclear energy, renewable energy and the environment, Geothermal energy, Solar Energy,Wind energy, Hydraulic energy, Hydrogen and biomass energy, The use of renewable energy sources and their effects on the environment.				
<b>KIM727</b>	<b>Conversion Technologies of Biomass</b>	<b>3</b>	<b>0</b>	<b>3</b>	<b>8</b>
<b>Purpose and Content</b>	The main objective of this course is to give general information about biomass and biofuels.What is biomass?, Conversion technologies of biomass, Liquefaction of biomass, The used methods to liquefy of biomass, Pyrolysis of Biomass, The slow pyrolysis of biomass, The fast pyrolysis of biomass, Liquefaction of biomass via hydrothermal process, The production of activated carbon from biomass, What is biodiesel?.,The production technologies of biodiesel, The role of biofuels in the future, The advantages of biofuels, Students Presentations.				
<b>KIM730</b>	<b>Isocyanate Chemistry and Polyurethanes</b>	<b>3</b>	<b>0</b>	<b>3</b>	<b>8</b>
<b>Purpose and Content</b>	This course covers the reactions of isocyanates,diisocyanates and their dimerization,polymerization mechanisms. To instructate the reactions of isocyanates and polyurathanes chemistry.To study their syntheses and methods and then characterizations.				
<b>KIM702</b>	<b>High Resolution NMR</b>	<b>3</b>	<b>0</b>	<b>3</b>	<b>8</b>
<b>Purpose and Content</b>	Postgraduate and PhD students will be able to get knowledge on NMR interpretation. 13C NMR Spectroscopy,introduction, absorp and resonance Puls NMR Spectroscopy, chemical shift, spin-spin coupling, two dimensional (2D)-NMR Spectroscopy(HETCOR, COSY, HMQC, HMBC, NOESY).				
<b>KIM718</b>	<b>Heterocyclic Systems</b>	<b>3</b>	<b>0</b>	<b>3</b>	<b>8</b>

**Bu belge, güvenli elektronik imza ile imzalanmıştır.**

Belge Doğrulama Kodu: BSMNAAUYUKLBelge Doğrulama Adresi : <https://turkiye.gov.tr/ebd?eK=4043&eD=BSMNAAUYUKL&eS=303253>



**KARABÜK ÜNİVERSİTESİ**  
**LİSANSÜSTÜ EĞİTİM ENSTİTÜSÜ**

<b>Purpose and Content</b>	To learn the chemical structures, reactivity and synthesis of heterocyclic compounds. To provide a basis for heterocyclic chemistry. To provide a basis for heterocyclic chemistry.				
<b>KIM733</b>	<b>Synthetic Organic Chemistry</b>	<b>3</b>	<b>0</b>	<b>3</b>	<b>8</b>
<b>Purpose and Content</b>	Organic synthetic methods, strategies and named reactions will be covered in the scope of the course. The course includes methods used in the synthesis of organic compounds, strategies that can be applied, and name reactions. Within the scope of the course, the methods learned will also be examined in the articles published in recent years.				
<b>KIM728</b>	<b>Application of Spectroscopy In Organic Structure Elucidation</b>	<b>3</b>	<b>0</b>	<b>3</b>	<b>8</b>
<b>Purpose and Content</b>	Learning about the theory and applications of spectroscopic methods used in structure elucidation. The course covers the spectroscopic methods such as IR, Mass and NMR, that are widely used in organic structure determination. After a comprehensive study on IR and mass spectroscopy, they will be used for the structure elucidation of organic molecules from simple to complex together with NMR.				
<b>KIM719</b>	<b>Carbonyl Chemistry</b>	<b>3</b>	<b>0</b>	<b>3</b>	<b>8</b>
<b>Purpose and Content</b>	To explain the chemical structures, reactivity and synthesis of carbonyl compounds. Reactivity of the carbonyl group, addition reactions to carbonyl group, addition and elimination reactions, the reduction of the carbonyl group, the reactivity of hydrogens adjacent to the keto-enol tautomerism, acid-base catalysis enolization, Epimerisation, halogenation, alkylation of aldehydes-ketones, condensation reactions.				
<b>KIM714</b>	<b>Conducting Polymers</b>	<b>3</b>	<b>0</b>	<b>3</b>	<b>8</b>
<b>Purpose and Content</b>	Electronic structures of conducting polymers, conducting mechanisms, synthesis and characterization techniques, properties and industrial applications of conducting polymers are given. Principles of electrical conduction and doping, theory and transport in conducting polymers, types of electrically conducting organic materials, electronic structure and optical response of conjugated polymers and oligomers, advances in the molecular design of functional conjugated polymers, electrochemistry of conducting polymers, applications of conducting polymers.				
<b>KIM737</b>	<b>Polymer Materials Chemistry</b>	<b>3</b>	<b>0</b>	<b>3</b>	<b>8</b>

**Bu belge, güvenli elektronik imza ile imzalanmıştır.**

Belge Doğrulama Kodu: BSMNAYUKLBelge Doğrulama Adresi : <https://turkiye.gov.tr/ebd?eK=4043&eD=BSMNAYUKL&eS=303253>



**KARABÜK ÜNİVERSİTESİ**  
**LİSANSÜSTÜ EĞİTİM ENSTİTÜSÜ**

<b>Purpose and Content</b>	To introduce general properties and characteristics of polymeric materials, interaction chemistry of the other constituents in blend, compozit, film, coating, fibre and to examine the most used polymers in details. Introduction to polymer materials, physical properties of polymeric materials, interaction of polymer with the other materials in the application where polymer and other materials are used together, materials chemistry, investigation of most used polymers.				
<b>KIM712</b>	<b>Reactive Groups Containig Monomers and Polymers II</b>	<b>3</b>	<b>0</b>	<b>3</b>	<b>8</b>
<b>Purpose and Content</b>	Introduce pharmaceutical and medical usafulness of the polymers that synthesized from monomers having reactive groups and learn their sturcture determination techniques in order to have their function for medical purposes. Ion conducting polymers, ionic migrations in polymers, super ion conducting polymers, applications ion conducting polymers, chitin heparinoids: their preperation and specifities, unimer micelles of functionilized amphiphilic polyelectrodes, self-organization of random copolymers of electrolyte and hydrophobic monomers, characterization of unimer micelles, unimer micelles functionalized with photoactive chromophores, polymer gels, properties and responses polymer gels, various applications of hydrogels, biomedical applications of hydrogels.				
<b>KIM734</b>	<b>Biosensors</b>	<b>3</b>	<b>0</b>	<b>3</b>	<b>8</b>
<b>Purpose and Content</b>	Introduce biosensors, in general classification of biosensors, their types and applications, electrochemical biosensors, electrodes and modifications, biosensor practice and evaluation of results. Biosensor definition, fundamentals of biosensor, biological idendification elements for biosensors, biosensor measurement methods, classification of biosensors, biosensors performance criteria, several types of biosensors, electrochemical biosensors, application of biosensors.				
<b>KIM713</b>	<b>Chomatographic Separation Methods</b>	<b>3</b>	<b>0</b>	<b>3</b>	<b>8</b>
<b>Purpose and Content</b>	To learn the basic princibles and techniques about chromatographic separation. Definition of Chromatography, Mechanisms of Chromatography, Adsorption Chromatography, Partion Chromatography, İon exchange Chromatography, Gel permatation Chromatography, Thin layer Chromatography, Paper Chromatography, Column Chromatography, Examination of articles containing paper, column, thin layer chromatograpies, Gas Chromatography, High Performance Liquid Chromatography (HPLC), Examination of articles containing gas and (HPLC) chromatograpies.				
<b>KIM735</b>	<b>Electrochemistry I</b>	<b>3</b>	<b>0</b>	<b>3</b>	<b>8</b>

**Bu belge, güvenli elektronik imza ile imzalanmıştır.**

Belge Doğrulama Kodu: BSMNAAUYUKLBelge Doğrulama Adresi : <https://turkiye.gov.tr/ebd?eK=4043&eD=BSMNAAUYUKL&eS=303253>



**KARABÜK ÜNİVERSİTESİ**  
**LİSANSÜSTÜ EĞİTİM ENSTİTÜSÜ**

<b>Purpose and Content</b>	Learn the fundamentals of electrochemistry and its practical applications, introduce principles and details of application. Fundamentals of electrochemistry, voltametry, fuel cell kinetics, electropolymerization and electrochromism, electrode modifications, stripping voltametry, spectroelectrochemistry, electroanalytical catalytic reactions, electromembrane separation techniques.
<b>KIM715</b>	<b>Advanced Analytical Chemistry</b> <b>3</b> <b>0</b> <b>3</b> <b>8</b>
<b>Purpose and Content</b>	To learn advanced modern methods of analysis in analytical chemistry. Postgraduate level review of modern analytical chemistry and the literature. Analytical process and quality assurance/quality control. Fundamentals of chemical analysis including homogeneous and heterogeneous equilibria, complex formation and redox systems. Use of modern analytical methods. Automated methods of analysis. Chemical and biochemical sensors. Hyphenated techniques in analytical chemistry. Topics covered may vary each year depending on the instructor(s).
<b>KIM716</b>	<b>Introduction to Enzymes</b> <b>3</b> <b>0</b> <b>3</b> <b>8</b>
<b>Purpose and Content</b>	To give a general knowledge about the enzymes, to learn the structure of enzymes, their kinetics, their catalyze mechanisms, activity determination, inhibitor effect. A brief history of enzymology, enzymes structure, enzyme-substrate interaction, structural components of enzymes; cofactors in enzymes, protein-ligand binding equilibria, kinetics of enzyme reactions, chemical mechanisms in enzyme catalysis; substrate—active site complementarity, experimental measures of enzyme activity, factors affecting the rate of enzymatic reactions, inhibitors and their mechanisms, types of artificial enzymes.
<b>KIM738</b>	<b>Inorganic Cyclic Compounds</b> <b>3</b> <b>0</b> <b>3</b> <b>8</b>
<b>Purpose and Content</b>	To give information about the cyclic compounds and gain a different perspective on inorganic chemistry. General information about Inorganic cyclic compounds, reactions and synthesis of phosphazenes, borazines, nitrogen-sulfur and crown ethers and their complex reactions.
<b>KIM717</b>	<b>Heterocyclic Chemistry</b> <b>3</b> <b>0</b> <b>3</b> <b>8</b>
<b>Purpose and Content</b>	To learn the chemical structures, reactivity and synthesis of heterocyclic compounds. Activity and synthesis of aromatic heterocyclic compounds; pyridines, quinolines and isoquinolines, pyryllium and benzopyryllium ions, pyrons and benzopyrones. Activities of diazine, pyridazine, pyrimidine and pyrazines. Synthesis and activities of pyrrole, thiophene and furans. Heterocyclic compounds containing more than two heteroatoms, saturated and partially unsaturated heterocyclic compounds.
<b>KIM701</b>	<b>Nuclear Magnetic Rezonans</b> <b>3</b> <b>0</b> <b>3</b> <b>8</b>

**Bu belge, güvenli elektronik imza ile imzalanmıştır.**

Belge Doğrulama Kodu: BSMNAAUYUKLBelge Doğrulama Adresi : <https://turkiye.gov.tr/ebd?eK=4043&eD=BSMNAAUYUKL&eS=303253>





**KARABÜK ÜNİVERSİTESİ**  
**LİSANSÜSTÜ EĞİTİM ENSTİTÜSÜ**

<b>Purpose and Content</b>	Using structure elucidation by NMR techniques. Introduction, Resonance, Chemical Shift, Spin-Spin Coupling, Proton-Proton Coupling, Spin Sytems, Chemical Shifting Reagents, Double Resonance, Dynamic NMR Spectroscopy.				
<b>KIM739</b>	<b>High Technology Ceramics</b>	<b>3</b>	<b>0</b>	<b>3</b>	<b>8</b>
<b>Purpose and Content</b>	To give information about the high-tech ceramics and traditional ceramics chemistry. Traditional ceramic understanding, recognition and processing of ceramic raw materials. General descriptions of advanced ceramics, application areas.				
<b>KIM742</b>	<b>Polymer Processing</b>	<b>3</b>	<b>0</b>	<b>3</b>	<b>8</b>
<b>Purpose and Content</b>	To provide a concept on polymer molding and forming methods, and general information of polymer processing. A general introduction to polymer materials. Plastic materials, processing, and resource types.Extrusion.Injection Molding , Compression Molding,Transfer Molding , Dip Molding,Rotational Molding.Casting.Thermoforming .Coating ,Mixing and Compounding .Additives of plastics; antioxidants, plasticizers, filling materials, heat stabilizers,UV stabilizers, lubricants, foaming agents, flame retardants.Fiber Processing.Foam Production Methods.Rubber Processing.Composite Materials Processing.				
<b>KIM745</b>	<b>Isolation Purification and Characterization Techniques of Bioacromolecules</b>	<b>3</b>	<b>0</b>	<b>3</b>	<b>8</b>
<b>Purpose and Content</b>	Proteins, nucleic acids, lipids, polysaccharides which are being at the living structure quantitative determination, purification and characterized methods are introduce. Structures, function in the organism, purification, kinetic properties and characterized methods of biomacromolecules.				
<b>KIM747</b>	<b>Macromolecular Complexes</b>	<b>3</b>	<b>0</b>	<b>3</b>	<b>8</b>
<b>Purpose and Content</b>	The aim of the course is to be able to follow current issues in the field of Macromolecular Complex Chemistry, to gain information about planning multidisciplinary studies, to gain basic information about preparing publications. Basic Macromolecular chemistry subjects, current research areas in Macromolecular complex chemistry, relationship of Macromolecular Complex chemistry with other disciplines, literature review on biochemistry, converting data obtained from studies into articles.				
<b>LUEE701</b>	<b>Scientific Research Techniques and Scientific Ethics</b>	<b>3</b>	<b>0</b>	<b>3</b>	<b>8</b>

**Bu belge, güvenli elektronik imza ile imzalanmıştır.**

Belge Doğrulama Kodu: BSMNAYUKLBelge Doğrulama Adresi : <https://turkiye.gov.tr/ebd?eK=4043&eD=BSMNAYUKL&eS=303253>



**KARABÜK ÜNİVERSİTESİ**  
**LİSANSÜSTÜ EĞİTİM ENSTİTÜSÜ**

<b>Purpose and Content</b>	The aim of the course is to introduce with main scientific research methods for graduate students, to provide, to experience preparing scientific research proposal, to implement appropriate research methods and to present statistical findings and conclusions in written format according to common scientific writing rules and publication ethics. Scientific research methods, process of scientific research, research questions and hypotheses, searching of literature, making a citation, publication ethics, ethical standards and legal limitations, data collection and analysis techniques, observation, interviewing, questionnaire, experimentation, referencing, findings and conclusion, scientific spelling rules.				
<b>KİM797</b>	<b>MSc Seminar</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>6</b>
<b>Purpose and Content</b>	To gain the ability of the oral presentation and discussion, to decide on the objectives of the thesis work. To present the thesis work				
<b>KİM7098D</b>	<b>Course Field of Specialization</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>
<b>Purpose and Content</b>	To give the general knowledge related to the thesis work, to develop the ability of analytical thinking. To learn to perform experiment, to research and to observe about the thesis work.				
<b>KİM7098T</b>	<b>Thesis Field of Specialization</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>
<b>Purpose and Content</b>	To give the general knowledge related to the thesis work, to develop the ability of analytical thinking. To learn to perform experiment, to research and to observe about the thesis work.				
<b>KİM799</b>	<b>MSc Thesis Research</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>26</b>
<b>Purpose and Content</b>	To gain the ability of getting the scientific information, its evaluation and interpretation by conductive scientific research. To perform thesis work.				

**Bu belge, güvenli elektronik imza ile imzalanmıştır.**

Belge Doğrulama Kodu: BSMNAYUKLBelge Doğrulama Adresi : <https://turkiye.gov.tr/ebd?eK=4043&eD=BSMNAYUKL&eS=303253>

