EK: 2/7

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **logosbULUDAĞ UNIVERSITY**  **GRADUATE SCHOOL OF NATURAL AND APPLIED SCIENCES**  **2017-2018 ACADEMIC YEAR COURSE PLAN** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **DEPARTMENT OF** | | | | DEPARTMENT OF CHEMISTRY | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **DEPARTMENT / PROGRAM** | | | | CHEMISTRY/UNIFIED DOCTORAL PROGRAM | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **COURSE STAGE** | **I. TERM / FALL** | | | | | | | | | | | | | | | | | | | **II. TERM / SPRING** | | | | | | | | | | | | | | | | | | |
| **Code** | | **Course Title** | | | **Type** | | | **T** | | **U** | | | | **L** | | | **Credit** | **ECTS** | **Code** | | **Course Title** | **Type** | | | | | **T** | | | | | **U** | | **L** | | **Credit** | **ECTS** |
| CHEM5001 | | SPECTROSCOPIC METHODS IN ANALYTICAL CHEMISTRY | | | Z | | | 3 | | 0 | | | | 0 | | | 3 | 6 | CHEM5002 | | PHYSICAL CHEMISTRY OF ATOM AND MOLECULAR SYSTEMS | Z | | | | | 3 | | | | | 0 | | 0 | | 3 | 6 |
| CHEM5003 | | ADVANCED INORGANIC CHEMISTRY | | | Z | | | 3 | | 0 | | | | 0 | | | 3 | 6 | CHEM5004 | | ADVANCED ORGANIC CHEMISTRY | Z | | | | | 3 | | | | | 0 | | 0 | | 3 | 6 |
| CHEM5025 | | ADVANCED BIOCHEMISTRY | | | Z | | | 3 | | 0 | | | | 0 | | | 3 | 6 | CHEM 6192 | | PHD THESIS II | Z | | | | | 0 | | | | | 1 | | 0 | | 0 | 1 |
| CHEM 6191 | | PHD THESIS I | | | Z | | | 0 | | 1 | | | | 0 | | | 0 | 1 | CHEM6182 | | ADVANCED TOPİCS IN PHD THESIS II | S | | | | | 4 | | | | | 0 | | 0 | | 0 | 5 |
| CHEM6181 | | ADVANCED TOPICS IN PHD THESIS I | | | S | | | 4 | | 0 | | | | 0 | | | 0 | 5 | CHEM5006 | | CHROMATOGRAPHIC METHODSIN ANALYTICAL CHEMISTRY | S | | | | | 3 | | | | | 0 | | 0 | | 3 | 6 |
| CHEM5005 | | ADVANCEDANALYTICAL CHEMISTRY | | | S | | | 3 | | 0 | | | | 0 | | | 3 | 6 | CHEM5008 | | MASS SPECTROMETRIC METHODS | S | | | | | 3 | | | | | 0 | | 0 | | 3 | 6 |
| CHEM5007 | | SAMPLE PREPARATIONMETHODSIN ANALYTICAL CHEMISTRY | | | S | | | 3 | | 0 | | | | 0 | | | 3 | 6 | CHEM5010 | | INTRODUCTION TO ATOMIC SPECTROSCOPY | S | | | | | 3 | | | | | 0 | | 0 | | 3 | 6 |
| CHEM5009 | | INTRODUCTION TOCHEMOMETRICS | | | S | | | 3 | | 0 | | | | 0 | | | 3 | 6 | CHEM5012 | | NUCLEARANALYTICALTECHNIQUES | S | | | | | 3 | | | | | 0 | | 0 | | 3 | 6 |
| CHEM5011 | | POTENTIOMETRY IN ANALYTICAL CHEMISTRY | | | S | | | 3 | | 0 | | | | 0 | | | 3 | 6 | CHEM5014 | | SELECTED TOPICS INCOORDINATION CHEMISTRY | S | | | | | 3 | | | | | 0 | | 0 | | 3 | 6 |
| CHEM5013 | | SPECTROSCOPIC METHODS IN INORGANIC CHEMISTRY | | | S | | | 3 | | 0 | | | | 0 | | | 3 | 6 | CHEM5016 | | CYCLICVOLTAMMETRY | S | | | | | 3 | | | | | 0 | | 0 | | 3 | 6 |
| CHEM5015 | | THERMALANALYSIS METHODS | | | S | | | 3 | | 0 | | | | 0 | | | 3 | 6 | CHEM5018 | | RESEARCH METHODSIN INORGANIC CHEMISTRY | S | | | | | 3 | | | | | 0 | | 0 | | 3 | 6 |
| CHEM5017 | | INDUSTRIAL INORGANIC CHEMISTRY | | | S | | | 3 | | 0 | | | | 0 | | | 3 | 6 | CHEM5020 | | CHEMISTRY OF COORDINATION COMPOUNDS IN SOLUTIONS | S | | | | | 3 | | | | | 0 | | 0 | | 3 | 6 |
| CHEM5019 | | ACIDS, BASES AND SOLVENTS | | | S | | | 3 | | 0 | | | | 0 | | | 3 | 6 | CHEM5022 | | CHEMISTRY OFELEMENTS | S | | | | | 3 | | | | | 0 | | 0 | | 3 | 6 |
| CHEM5021 | | SMART POLYMERS | | | S | | | 3 | | 0 | | | | 0 | | | 3 | 6 | CHEM5024 | | OXIDATIONANDREDUCTIONREACTIONSIN INORGANIC CHEMISTRY | S | | | | | 3 | | | | | 0 | | 0 | | 3 | 6 |
| CHEM5023 | | POROUS MATERIALS | | | S | | | 3 | | 0 | | | | 0 | | | 3 | 6 | CHEM5026 | | ADVANCED ANALYSIS TECHNIQUES OF BIOMOLECULES | S | | | | | 3 | | | | | 0 | | 0 | | 3 | 6 |
| CHEM5027 | | PHYSIOCHEMICAL TREATMENTTECHNIQUESWASTEWATER | | | S | | | 3 | | 0 | | | | 0 | | | 3 | 6 | CHEM5028 | | ELECTRONIC TEORIES IN ORGANIC CHEMISTRY | S | | | | | 3 | | | | | 0 | | 0 | | 3 | 6 |
| CHEM5029 | | SEPERATION AND PURIFICATION TECHNIQUES IN ORGANIC CHEMISTRY | | | S | | | 3 | | 0 | | | | 0 | | | 3 | 6 | CHEM5030 | | ION-EXCHANGERS AND THEIR PHYSICAL CHEMISTRY | S | | | | | 3 | | | | | 0 | | 0 | | 3 | 6 |
| CHEM5031 | | SEPARATION METHODS INANALYTICAL CHEMISTRY | | | S | | | 3 | | 0 | | | | 0 | | | 3 | 6 | CHEM5032 | | SYNTHETIC SPECIALTY POLYMERS | S | | | | | 3 | | | | | 0 | | 0 | | 3 | 6 |
| CHEM5033 | | ADSORPTION METHODSIN ANALYTICAL CHEMISTRY | | | S | | | 3 | | 0 | | | | 0 | | | 3 | 6 | CHEM5034 | | HETEROGENEOUS CATALYSIS | S | | | | | 3 | | | | | 0 | | 0 | | 3 | 6 |
| CHEM5035 | | ANALYSIS METHODS FOR WEAK ENERGY BONDS | | | S | | | 3 | | 0 | | | | 0 | | | 3 | 6 | CHEM5036 | | INTRODUCTION TO NANOTECHNOLOGY | S | | | | | 3 | | | | | 0 | | 0 | | 3 | 6 |
| CHEM5037 | | MOLECULAR IMPRINTED POLYMERS AND NANOBIOTECHNOLOGICAL APPLICATIONS | | | S | | | 3 | | 0 | | | | 0 | | | 3 | 6 | CHEM5038 | | ORGANIC REACTIONS KNOWN WITH SPECIAL NAMES | S | | | | | 3 | | | | | 0 | | 0 | | 3 | 6 |
| CHEM5039 | | GREEN ORGANIC SYNTHESIS REACTIONS | | | S | | | 3 | | 0 | | | | 0 | | | 3 | 6 | CHEM5040 | | ELECTROANALYTICAL CHEMISTRY | S | | | | | 3 | | | | | 0 | | 0 | | 3 | 6 |
| CHEM5041 | | DNA,RNA and PROTEIN SYNTHESIS METABOLISM | | | S | | | 3 | | 0 | | | | 0 | | | 3 | 6 | CHEM5042 | | TRANSPORT and BIOSIGNALING in BIOLOGICAL MEMBRANES | S | | | | | 3 | | | | | 0 | | 0 | | 3 | 6 |
|  | |  | | |  | | |  | |  | | | |  | | |  |  | CHEM5044 | | BIOSYNTHESIS | S | | | | | 3 | | | | | 0 | | 0 | | 3 | 6 |
|  | |  | | |  | | |  | |  | | | |  | | |  |  | CHEM5046 | | HORMONAL REGULATION of METABOLISM | S | | | | | 3 | | | | | 0 | | 0 | | 3 | 6 |
| **Total Credits** | | | | | | | | | | | | | | | | | **12** | **30** | **Total Credits** | | | | | | | | | | | | | | | | | **12** | **30** |
| **STAGE THESIS** | **III. TERM / FALL** | | | | | | | | | | | | | | | | | | | **IV. TERM / SPRING** | | | | | | | | | | | | | | | | | | |
| CHEM6193 | | PHD THESIS III | | | Z | | | 0 | | 1 | | | | 0 | | | 0 | 1 | CHEM6194 | | PHD THESIS IV | Z | | | | | 0 | | | | | 1 | | 0 | | 0 | 1 |
|  | |  | | |  | | |  | |  | | | |  | | |  |  | CHEM6172 | | SEMINAR | Z | | | | | 0 | | | | | 2 | | 0 | | 0 | 4 |
|  | |  | | |  | | |  | |  | | | |  | | |  |  | FEN6000 | | RESEARCH TECHNIQUES and PUBLICATION ETHICS | Z | | | | | 2 | | | | | 0 | | 0 | | 2 | 2 |
| CHEM6183 | | ADVANCED TOPICS IN PHD THESIS III | | | S | | | 4 | | 0 | | | | 0 | | | 0 | 5 | CHEM6184 | | ADVANCED TOPICS IN PHD THESIS IV | S | | | | | 4 | | | | | 0 | | 0 | | 0 | 5 |
| CHEM6003 | | PRACTICES OF GROUP THEORY IN MOLECULAR SPECTROSCOPY | | | S | | | 3 | | 0 | | | | 0 | | | 3 | 6 | CHEM6002 | | FACTOR ANALYSISIN CHEMISTRY | S | | | | | 3 | | | | | 0 | | 0 | | 3 | 6 |
| CHEM6005 | | DESIGN OF MOLECULE IN ORGANIC | | | S | | | 3 | | 0 | | | | 0 | | | 3 | 6 | CHEM6004 | | MICROMETHODSIN ANALYTICAL CHEMISTRY | S | | | | | 3 | | | | | 0 | | 0 | | 3 | 6 |
| CHEM6007 | | LIQUID CHROMATOGRAPHY | | | S | | | 3 | | 0 | | | | 0 | | | 3 | 6 | CHEM6006 | | COUPLED METHODS IN CHROMATOGRAPHY | S | | | | | 3 | | | | | 0 | | 0 | | 3 | 6 |
| CHEM6009 | | ACTIVATED CARBON ADSORPTION AND APPLICATIONS | | | S | | | 3 | | 0 | | | | 0 | | | 3 | 6 | CHEM6008 | | CHEMOMETRIC METHODS | S | | | | | 3 | | | | | 0 | | 0 | | 3 | 6 |
| CHEM6011 | | ANALYTICAL TECHNIQUES IN VOLTAMMETRY | | | S | | | 3 | | 0 | | | | 0 | | | 3 | 6 | CHEM6010 | | BIOANALYTICAL CHEMISTRY | S | | | | | 3 | | | | | 0 | | 0 | | 3 | 6 |
| CHEM6013 | | ANALYTICAL CHEMISTRY OF COMPLEX MATRICES | | | S | | | 3 | | 0 | | | | 0 | | | 3 | 6 | CHEM6012 | | ASYMMETRIC SYNTHESIS IN ORGANIC CHEMİSTRY | S | | | | | 3 | | | | | 0 | | 0 | | 3 | 6 |
| CHEM6015 | | ATOMIC SPECTROSCOPIC METHODS | | | S | | | 3 | | 0 | | | | 0 | | | 3 | 6 | CHEM6014 | | NUCLEAR MAGNETIC RESONANCE SPECTROSCOPY IN ORGANIC STRUCTURE IDENTIFICATION | S | | | | | 3 | | | | | 0 | | 0 | | 3 | 6 |
| CHEM6017 | | MECHANISMS OF MOLECULAR REARRANGEMENTS I | | | S | | | 3 | | 0 | | | | 0 | | | 3 | 6 | CHEM6016 | | INTERFACESCIENCE II | S | | | | | 3 | | | | | 0 | | 0 | | 3 | 6 |
| CHEM6019 | | PRINCIPLES OF ORGANIC SYNTHESIS I | | | S | | | 3 | | 0 | | | | 0 | | | 3 | 6 | CHEM6018 | | SOLID STATE CHEMISTRY | S | | | | | 3 | | | | | 0 | | 0 | | 3 | 6 |
| CHEM6021 | | CATALYSIS | | | S | | | 3 | | 0 | | | | 0 | | | 3 | 6 | CHEM6020 | | ELECTROCHEMICALSENSORS | S | | | | | 3 | | | | | 0 | | 0 | | 3 | 6 |
| CHEM6023 | | CRYSTAL CHEMISTRY | | | S | | | 3 | | 0 | | | | 0 | | | 3 | 6 | CHEM6022 | | ADVANCED MATERIAL CHEMISTRY | S | | | | | 3 | | | | | 0 | | 0 | | 3 | 6 |
| CHEM6025 | | NATURAL ANTIOXIDANTS | | | S | | | 3 | | 0 | | | | 0 | | | 3 | 6 | CHEM6024 | | ADVANCEDBIOINORGANIC CHEMISTRY | S | | | | | 3 | | | | | 0 | | 0 | | 3 | 6 |
| CHEM6027 | | MOLECULAR SYMMETRYAND APPLICATIONS | | | S | | | 3 | | 0 | | | | 0 | | | 3 | 6 | CHEM6026 | | REACTION MECHANISMSIN INORGANIC | S | | | | | 3 | | | | | 0 | | 0 | | 3 | 6 |
| CHEM6029 | | BORON CHEMISTRY | | | S | | | 3 | | 0 | | | | 0 | | | 3 | 6 | CHEM6028 | | MOLECULAR RECOGNITION AND BIOMOLECULE COMPLEXES | S | | | | | 3 | | | | | 0 | | 0 | | 3 | 6 |
| CHEM6031 | | ADVANCED ORGANOMETALIC CHEMISTRY | | | S | | | 3 | | 0 | | | | 0 | | | 3 | 6 | CHEM6030 | | FRACTIONATION AND SPECIATION METHODS IN FOOD SAMPLES | S | | | | | 3 | | | | | 0 | | 0 | | 3 | 6 |
| CHEM6035 | | ION-EXCHANGERS AND THEIR APPLICATIONS | | | S | | | 3 | | 0 | | | | 0 | | | 3 | 6 | CHEM6032 | | INORGANIC POLYMERS | S | | | | | 3 | | | | | 0 | | 0 | | 3 | 6 |
| CHEM6037 | | PROTEIN PURIFICATION AND CHARACTERIZATION | | | S | | | 3 | | 0 | | | | 0 | | | 3 | 6 | CHEM 6034 | | X-RAY CRYSTALLOGRAPHY | S | | | | | 3 | | | | | 0 | | 0 | | 3 | 6 |
| CHEM6039 | | INTERFACESCIENCE I | | | S | | | 3 | | 0 | | | | 0 | | | 3 | 6 | CHEM6036 | | POLYMER KINETIC THEORIES | S | | | | | 3 | | | | | 0 | | 0 | | 3 | 6 |
| CHEM6041 | | ADVANCEDPOLYMER SCIENCEAND TECHNOLOGYI | | | S | | | 3 | | 0 | | | | 0 | | | 3 | 6 | CHEM6038 | | ADVANCEDPOLYMER SCIENCEAND TECHNOLOGY II | S | | | | | 3 | | | | | 0 | | 0 | | 3 | 6 |
| CHEM6043 | | OXIDATION MECHANISMS IN ORGANIC CHEMISTRY | | | S | | | 3 | | 0 | | | | 0 | | | 3 | 6 | CHEM6040 | | MACROMOLECULAR CHEMISTRY | S | | | | | 3 | | | | | 0 | | 0 | | 3 | 6 |
| CHEM6045 | | QUALITY CONTROL IN ANALYTICAL CHEMISTRY | | | S | | | 3 | | 0 | | | | 0 | | | 3 | 6 | CHEM6042 | | STRUCTURE IDENTIFICATION IN ORGANIC CHEMISTRY | S | | | | | 3 | | | | | 0 | | 0 | | 3 | 6 |
| CHEM6047 | | ADVANCED COORDINATION CHEMISTRY | | | S | | | 3 | | 0 | | | | 0 | | | 3 | 6 | CHEM6044 | | MECHANISMS OF MOLECULAR REARRANGEMENTS II | S | | | | | 3 | | | | | 0 | | 0 | | 3 | 6 |
| CHEM6049 | | OPTICAL AND CHEMICAL SENSORS | | | S | | | 3 | | 0 | | | | 0 | | | 3 | 6 | CHEM6046 | | PRINCIPLES OF ORGANIC SYNTHESIS II | S | | | | | 3 | | | | | 0 | | 0 | | 3 | 6 |
|  | |  | | |  | | |  | |  | | | |  | | |  |  | CHEM6048 | | CORROSION AND ITS ELECTROCHEMICAL BASICS | S | | | | | 3 | | | | | 0 | | 0 | | 3 | 6 |
|  | |  | | |  | | |  | |  | | | |  | | |  |  | KIM6050 | | OLED TECHNOLOGY | S | | | | | 3 | | | | | 0 | | 0 | | 3 | 6 |
| **Total Credits** | | | | | | | | | | | | | | | | | **14** | **30** | **Total Credits** | | | | | | | | | | | | | | | | | **12** | **30** |
| **STAGE THESIS** | **V. TERM / FALL** | | | | | | | | | | | | | | | | | | | **VI. TERM / SPRING** | | | | | | | | | | | | | | | | | | |
| CHEM6185 | ADVANCED TOPICS IN PHD THESIS V | | | | | Z | | 4 | | | | 0 | | | | 0 | 0 | 5 | CHEM6186 | ADVANCED TOPICS IN PHD THESIS VI | | | | Z | | | | | 4 | | 0 | | | | 0 | 0 | 5 |
| CHEM6195 | PHD THESIS V | | | | | Z | | 0 | | | | 1 | | | | 0 | 0 | 15 | CHEM6196 | PHD THESIS VI | | | | Z | | | | | 0 | | 1 | | | | 0 | 0 | 25 |
| CHEM 6177 | PHD PROFICIENCY EXAMINATION | | | | | Z | | 0 | | | | 0 | | | | 0 | 0 | 10 |  |  | | | |  | | | | |  | |  | | | |  |  |  |
|  | **Total Credits** | | | | | | | | | | | | | | | | **0** | **30** |  | **Total Credits** | | | | | | | | | | | | | | | | **0** | **30** |
| **VII. TERM / FALL** | | | | | | | | | | | | | | | | | | | **VIII. TERM / SPRING** | | | | | | | | | | | | | | | | | | |
| CHEM6187 | ADVANCED TOPICS IN PHD THESIS VII | | | Z | | | | 4 | | | 0 | | | | 0 | | 0 | 5 | CHEM6188 | ADVANCED TOPICS IN PHD THESIS VIII | | | Z | | | | | 4 | | | | 0 | | 0 | | 0 | 5 |
| CHEM6197 | PHD THESIS VII | | | Z | | | | 0 | | | 0 | | | | 0 | | 0 | 25 | CHEM6198 | PHD THESIS VIII | | | Z | | | | | 0 | | | | 0 | | 0 | | 0 | 25 |
|  | **Total Credits** | | | | | | | | | | | | | | | | **0** | **30** |  | **Total Credits** | | | | | | | | | | | | | | | | **0** | **30** |
| **IX. TERM / FALL** | | | | | | | | | | | | | | | | | | | **X. TERM / FALL** | | | | | | | | | | | | | | | | | | |
| CHEM6189 | ADVANCED TOPICS IN PHD THESIS IX | | | | | | Z | 4 | 0 | | | | 0 | | | | 0 | 5 | CHEM6190 | ADVANCED TOPICS IN PHD THESIS X | | | | | Z | 4 | | | | 0 | | | 0 | | | 0 | 5 |
| CHEM6199 | PHD THESIS IX | | | | | | Z | 0 | 0 | | | | 0 | | | | 0 | 25 | CHEM6200 | PHD THESIS X | | | | | Z | 0 | | | | 0 | | | 0 | | | 0 | 25 |
|  | **Total Credits** | | | | | | | | | | | | | | | | **0** | **30** |  | **Total Credits** | | | | | | | | | | | | | | | | **0** | **30** |
|  | **TOTAL CREDITS: 47 - TOTAL ECTS: 260** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |