

COURSES CODE	COURSES NAME	SKS	CHARACTERISTIC
TA5010	Introduction to Mining Engineering	2	Elective
TA5011	Numerical Analysis	3	Elective
TA5012	Regional Development	2	Elective
TA5013	Introduction of Geology Science	3	Elective
TA5014	Coal Preparation and Washing	3	Elective
TA5101	Applied Mathematics	2	Mandatory
TA5101	Applied Mathematics	2	Mandatory
TA5101	Applied Mathematics	2	Mandatory
TA5101	Applied Mathematics	2	Mandatory
TA5102	Research Methodology	3	Mandatory
TA5103	Ore mineral genesis	2	Mandatory
TA5104	Minerals and Concentration	2	Mandatory
TA5105	Continuum mechanics	2	Mandatory
TA5106	Advanced Rock Mechanics I	3	Mandatory
TA5107	Management of Minerals and Energy Resources	3	Mandatory
TA5108	Mine Dewatering & Water Management	2	Mandatory
TA5109	Microeconomy	2	Mandatory
TA5110	Advanced Metallurgical Thermodynamics	3	Mandatory
TA5111	Metallurgical Engineering Process I	2	Mandatory
TA5112	Genesis and Quality of Coal	2	Mandatory
TA5113	Mineral and Coal Processing	3	Mandatory
TA5114	Advanced Electrochemical	3	Mandatory
TA5115	Exploration Drilling and Well Logging	3	Elective
TA5116	Economic for Mineral Deposit	2	Elective
TA5117	Advanced Mine Hydro geology	2	Elective
TA5118	Metallurgical Process Waste Treatment	2	Elective
TA5119	Physical Chemistry of Mineral Processing	2	Elective
TA5120	Rate Processes of Pyrometallurgy	2	Elective
TA5121	High Pressure and High Temperature Metallurgy	2	Elective
TA5123	Economics Evaluation and Investment	3	Elective
TA5124	Metallurgical Bioprocessing	3	Elective
TA5137	Mathematical Economics	3	Mandatory
TA5211	Exploration of Mineral Deposits	4	Mandatory
TA5212	Applied Geostatistics	2	Mandatory
TA5213	Explosive and Blasting Technology	2	Mandatory
TA5214	Advanced Rock Mechanics II	2	Mandatory
TA5215	Statistical Analysis	2	Mandatory
TA5217	Operation Research	2	Mandatory
TA5218	Mining Environmental Management in Mining	3	Mandatory
TA5219	Econometric and Forecasting	3	Mandatory
TA5220	Macroeconomy	2	Mandatory
TA5221	Mineral and Energy Economics	3	Mandatory
TA5221	Mineral and Energy Economics	3	Mandatory
TA5222	Metallurgical Process Engineering II	3	Mandatory
TA5223	Advanced Metallurgical Transport Phenomena	3	Mandatory

TA5224	Advanced Coal Utilization	2	Mandatory
TA5225	Physical Metallurgy & Fracture Mechanics	3	Mandatory
TA5226	High Temperature Corrosion	3	Mandatory
TA5227	Advanced Soil Mechanics	2	Elective
TA5228	Advanced Metallurgical Kinetics	3	Elective
TA5229	Surface and thermomechanics behavior	3	Elective
TA5230	Fracture Mechanics and Fatigue	3	Elective
TA5231	Solidification and Metal Casting	2	Elective
TA5232	Mechanical Metallurgy	2	Elective
TA5233	Advanced Physical Metallurgy	3	Elective
TA5234	Coal Mining System	2	Elective
TA5235	Advanced Metallurgical Failure Analysis	2	Elective
TA5236	Mathematical Modeling	2	Elective
TA5237	Finance Analysis	3	Elective
TA6010	Special Topics	3	Mandatory
TA6011	Technical Analysis for Hydrothermal Ore Deposit	2	Elective
TA6012	Advanced Geostatistical for Ore Evaluation Resources	3	Elective
TA6013	Exploration and Evaluation of Geothermal	2	Elective
TA6014	Land Management and Reclamation	2	Elective
TA6015	Social Aspect in Mining	2	Elective
TA6016	Ecology for Mining	2	Elective
TA6017	Non-destructive Testing and Failure Analysis	2	Elective
TA6018	Degradation of Non-metallic Materials	2	Elective
TA6019	Surface Engineering	2	Elective
TA6020	Inhibitors and Organic Protective Coatings	2	Elective
TA6021	Cathodic Protection	2	Elective
TA6022	Materials Characterization	2	Elective
TA6023	Pipeline Specification and Design	2	Elective
TA6024	Pipeline Risk Management	2	Elective
TA6025	Pipeline Defect Assessment	2	Elective
TA6091	Thesis I	2	Mandatory
TA6092	Thesis II	5	Mandatory
TA6111	Exploration Management	3	Mandatory
TA6112	Tunneling Method	2	Mandatory
TA6113	Sustainable Regional Development	3	Mandatory
TA6114	Coal Washing Plant Design	4	Mandatory
TA6115	Aqueous Corrosion and Its Prevention	2	Mandatory
TA6116	Rock Hydraulics	2	Elective
TA6118	Discontinuities Modeling	2	Elective
TA6119	Control & Management of Industrial Waste	3	Elective
TA6120	Industrial Mineral Management	2	Elective
TA6121	Decision Making Analysis	2	Elective
TA6122	Dynamics and Simulation of Comminution	2	Elective
TA6123	Phenomena Transport of Concentration	2	Elective
TA6124	Advanced of Flotation	2	Elective
TA6125	Aqueous Solution and Electrode Process	2	Elective
TA6126	Pipeline Integrity Analysis	2	Elective

TA6210	Advanced Phase Transformation	2	Elective
TA6212	Pipeline Loading Simulation	2	Elective