



AFRICAN MINERALS AND GEOSCIENCES CENTRE (AMGC)

LIST OF TRAINING COURSES – 2019/20

Training Topics	Description	Duration	Tentative Schedule	Fee
Chemical and Environmental Services				
Spectrometric Methods	Theory, operation and maintenance Atomic Absorption Spectrometer (AAS), Inductively Coupled Plasma Optical Emission Spectrometry (ICP-OES) and X-Ray Fluorescence (XRF). Laser Ablation Inductively Coupled Plasma Mass Spectrometry (LA-ICP-MS) and Scanning Electron Microscope (SEM) applications.	2 weeks	15-26 Jul 2019 20-31 Jan 2020	\$800
Analysis of Gold and Other Precious Metals	Various methods of analysing gold and other precious metals. Aspects of the Platinum Group Metals (PGMs).	2 weeks	19-30 Aug 2019 17-28 Feb 2020	\$800
Environmental Technologies and Ecology	Technological solutions of environmental problems (water, air, soil and noise). Environmental quality assessment in industry, agriculture, mining and water for sustainability.	2 weeks	16-27 Sep 2019 15-26 Jun 2020	\$800
Modern Laboratory Management Methods	Techniques for managing laboratories. Quality performance and compliance issues, rationale and process of accreditation for ISO/IEC 17025 and certification for ISO 9001. Digital management of quality control using Laboratory Information Management System (LIMS) and validation of analytical methods.	2 weeks	21 Oct -01 Nov 2019 16-27 Mar 2020	\$800
Quality Control and Quality Assurance in Laboratories	Overview on Quality Control (QC) and Quality Assurance (QA), Compliance for quality improvement, Laboratory risk management and Laboratory Quality Management System (LQMS).	2 weeks	18-29 Nov 2019 11-22 May 2020	\$800

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Mineralogy, Petrology and Gemmology Services				
Gemstone Characterization and Identification Techniques	Gemstone origin, deposits and mining methods, Physical and optical properties of gemstones, Working principles of gemmological tools and equipment, Description of gemstones, Testing and identification of gemstones, Overview on gemstone cutting, Different treatments on gemstones, Marketing plans and techniques for handling gemstones, Synthetic gemstones	2 weeks	01-12 Jul 2019	\$800
Gemstone Identification Techniques	Physical and optical properties of gemstones, Working principles of gemmological tools and equipment, Testing and identification of gemstones	1 week	12-16 Aug 2019	\$400
Gemstone Value Addition Techniques (Gem Cutting)	Rough gemstone sorting and grading, different techniques for gemstone cutting (faceting, cabbing and free form carving), evaluation of cut stones	2 weeks	15-26 Jul 2019	\$800
Gemstone Cabochon Making & Carving	Gemstone sorting, cabbing, and free form carving	1 week	19-23 Aug 2019	\$400
Gemstone Faceting	Gemstone sorting, faceting	1 week	23-27 Sep 2019	\$400
Gemstone Identification and Value Addition Techniques	Physical and optical properties of gemstones, Working principles of gemmological tools and equipment, Testing and identification of gemstones. Rough gemstone sorting and grading, different techniques for gemstone cutting (faceting, cabbing and free form carving), evaluation of cut stones	3 weeks	07-25 Oct 2019	\$1,200
Petrological Sample Preparation and Analytical Techniques	Thin section preparation, Polished section preparation, Petrographic examination	2 weeks	02-13 Sep 2019	\$800
Industrial Minerals Application Services				
Pottery for Beginners	Introduction to pottery and ceramics, Classification of pottery and ceramic products, Raw materials used, Identification of raw materials, Raw materials preparation and basic forming methods	2 weeks	13-24 Aug 2019	\$800
Mould Making	Material used for modelling and mould making, Preparation of plaster of Paris, Shrinkage calculations and drawings enlargement, Model making, Mother mould making, Case mould making	2 weeks	23 Sep - 04 Oct 2019	\$800

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Forming Techniques	Hand building, Coiling, Slip casting-deflocculants, Solid and hollow casting, Thixotropy, Jigger & Jollying, Pressing, Throwing	2 weeks	15-26 Oct 2019	\$800
Decorations in Pottery and Ceramics	Understanding ceramic oxides, Colour blending and firing temperature, types of decorations – inlaying, sigraffito, stenciling, Glazing, Decor transfer, Engobe preparations	2 weeks	18-30 Nov 2019	\$800
Body Composition Formulation	Single raw material test, Shrinkage test, Porosity test, The function of Alumina & flux in the body, Triaxial blending	2 weeks	03-14 Feb 2020	\$800
Glaze Formulation	Introduction to glaze, Glaze components – oxides, alumina & fluxes, What determines glaze firing temperature, Selection of raw materials for glaze, Glazing rules and techniques, Glaze defects and remedies	2 weeks	02- 13 Mar 2020	\$800
Mineral Processing and Small-scale Mining Services				
Mineral Processing Basics – Beneficiation Operations and Metallurgical Processes	The course covers fundamental principles and terminology with broad overview of current technical and operating issues and circuit design considerations. Topics covered include; introduction to mineral processing, comminution and liberation, classification; mineral concentration methods (gravity, flotation and magnetic); and solid/liquid separation. It also covers extractive metallurgy and the classification of metals, their uses and metal production.	2 weeks	22 Jul - 02 Aug 2019 09-20 Dec 2019 04-15 May 2020	\$800
General Sampling Techniques and Sample Preparation for Laboratory Testing	Sampling, sample preparation and analysis of environmental and geological samples. It provides an understanding of the sampling theory, types of sampling and sampling protocols, involved analytical measurement, composition and classification; sampling quality control; and assays methods	2 weeks	12-23 Aug 2019 05-17 Jan 2020	\$800
Issues and Formalization of the Artisanal and Small Scale Mining Activities	To provide ASM operators with technical, management and environmental knowledge for sound improvement of their activities. Particular emphasis is on importance of application of improved technics and use of geological data of deposits in environmentally friendly ways for sustainable ASM Activities. Impacts of ASM like mercury pollution, cyanide pollution, direct dumping of tailings and effluents into rivers, threats from improperly constructed tailings dams, river damage in alluvial areas, erosion damage and deforestation, and landscape destruction.	2 weeks	02-13 Sep 2019 27 Jan - 7 Feb 2020 25 May - 05 Jun 2020	\$800

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Techniques of Gold Cyanidation for Small Scale Mining Operations	Detailed accounting of the usage of cyanide for extraction and recovery of gold, and of cyanide toxicity and chemistry. It covers cyanide leaching techniques and gold purification and recovery from solution methods.	1 week	23-27 Sep 2019 17-21 Feb 2020	\$400
The Economics and Evaluation of the Minerals Industry	Fundamental aspects of the evaluation of mineral investments from examining the mining stages with particular emphasis on cash flow models and project acceptance and rejection criteria. This course also examines the basic approaches and methods of developing evaluations for mineral projects and techniques for risk assessment.	2 week	07-18 Oct 2019 02-13 Mar 2020	\$800
Metallurgical Balance and Process Control	The distribution of the various products of a concentrator, and the values contained in them. It provides a basis for decisions making about the mineral processing operations since the values of recovery and grade obtained from the accounting procedure are indications of process efficiency	2 weeks	28 Oct - 08 Nov 2019 23 Mar - 03 Apr 2020	\$800
Environmental Management in Mining	The negative impacts which could arise from the exploration, operation and decommissioning phase of any mining project small, medium or large scale. It covers topics related to Water Management, Land and biodiversity Management, Waste Management and Air pollution.	1 week	18-22 Nov 2019 15-19 Jun 2020	\$400
Geo-information Services				
GIS and Remote Sensing for Mineral Exploration and Geological Mapping	Geological interpretation of satellite images, to enabling the participant to relate the geological structure and lithology with their geomorphological manifestation. Fundamentals of remote sensing including principles of electromagnetic radiation is needed. Various band combination, band ratios and enhancements techniques for visual interpretation and feature extraction by quantitative methods will be deployed to aid in lithology, structures and hydrothermal alteration zones delineation. The project work will use various types of remote sensing data products over different types of terrain, aims at providing high level of confidence to individual trainee to carry out their assignments in the elated fields in their respective countries.	2 weeks	15-26 Jul 2019 26 Aug - 06 Sep 2019 28 Oct - 08 Nov 2019 13-24 Jan 2020 02-13 Mar 2020 04-15 May 2020	\$800

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Geophysical and Geochemical Data Processing and Interpretation	Geophysical and geochemical data types, data collection methods, data reduction and processing, interpretation of geophysical and geochemical maps, integration of geophysical and geochemical data with other data sets such as satellite images, geological maps and elevation models for interpretation.	2 weeks	19-30 Aug 2019 07-18 Oct 2019 26 Jan - 07 Feb 2020 22 Mar - 03 Apr 2020 04-15 May 2020	\$800
Data Integration and Mineral Targeting	GIS-based spatial data processing, analysis, visualization, and decision-making. The course includes exercises and case studies with the view to develop skills in data capture, data integration, digital mapping, raster and vector geoprocessing, spatial analysis and modeling, and use of GIS as a data management and decision-making tool in earth science. Use of GIS in site suitability analysis and Mineral Prospectivity Mapping using Boolean, Index Overlay, and Fuzzy Logic overlays	2 weeks	09-20 Sep 2019 18-29 Nov 2019 17-28 Feb 2020 20 Apr - 01 May 2020 22 Jun - 03 Jul 2020	\$800
Geostatistics Application in Geology	Practical experience of using the statistical environment and packages in R for exploratory analysis variogram estimation and modelling and optimal estimation of sample values at unsampled sites using kriging.	2 weeks	30 Sep - 11 Oct 2019 09-20 Dec 2019 09-20 Mar 2020 18-29 May 2020	\$800
Mineral Exploration and Resource/Reserve Estimation	Introduction to Exploration, Evaluation and Extraction (Mining) of mineral resources. Mineral Exploration Methods, reconnaissance survey, Geological Mapping, Geochemical survey and Geophysical survey. Data integration, analysis and interpretation of results for target areas identification. Resource/reserve estimation with data collection and handling, data quality, data handling and data validation, and data analysis and interpretation. Statistical methods of resource/reserve estimation, generate block model, block size selection, coding block model and block model parameters. Estimation concepts, estimations techniques, grade calculation and model validations. Mineral resource classifications and Reporting. Reporting code, sign off, external auditing and case study.	2 weeks	05-16 Aug 2019 21 Oct-01 Nov 2019 02-13 Dec 2019 03-14 Feb 2020 06-17 Apr 2020 08-19 Jun 2020	\$1,500
Web mapping	Preparation of maps for presentation and display on internet. This include designing of web interface, coding and preparation of web maps, web mapping standards, and setting up of web and mapping	2 weeks	23 Sep - 04 Oct 2019 25 Nov - 06 Dec 2019 20-31 Jan 2020	\$800

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	servers. Different web mapping services: WMS, WFS, WCS using open source mapping applications.		02-13 Mar 2020 25 May - 05 June 2020	
Geohazards	Natural hazards related to earth phenomenon are intrinsically related with geosciences. Study of these geoscience phenomena is a path to the mitigation and prevention of the hazardous events on our environment. This course details the causes of geohazards, and possible prevention mechanism.	2 weeks	11-22 Nov 2019 13-24 Jan 2020 06-17 Apr 2020 15-26 Jun 2020	\$800
Geoheritage sites of Tanzania	The importance of Geoheritage and its geoscience significance is discussed in this geo-tourism event which describes the different geoheritage sites and geoparks available in Tanzania: the highest peak of Africa (the Kilimanjaro Mountain), The world only carbonatite volcano (Oldonyo Lengai), The cradle of mankind (Olduvai Gorge), and others. The even includes visit to these and other sites with scientific and touristic interaction.	Duration and cost vary on the number of sites to be visited.		
Geo-safari – Geo-traverse across the Pan-African terrains: Tanzanian Craton, Greenstone belt, East African Rift Valley, the Kibaran and Mozambique belts.		Duration and cost vary according to the selected geo-safari type.		