

Structural Geology

- **Course 1: Back to basics (15th to the 19th of May 2017 Yamoussoukro)**
- **Course 2: Advanced applied structural geology (22nd to the 26th of May Ghana (Mine site to be advised))**

You can attend course 1 or 2 or both

WAXI Training

Organised by the University of Western Australia (UWA)

Registration Deadline 15 April 2017, send attached registration form to

luc.siebenaller@asdm.lu;corinne.debat@uwa.edu.au



Preamble

Applied structural geology is vastly under-utilized in the mining and mineral exploration industry. This situation stems from the following factors:

A lack of understanding that structural geology inputs does add value to mining operations and exploration programs. This is a matter of understanding ore systems, structural geology can add value.

A lack of knowledge of structural principles. This issue is a matter of training. Most graduate geologists have training in geochemistry and petrology and applications, but on commonly weak in field mapping and structural geology.

A lack of confidence. Many geologists lack confidence in applying structural geology principles to solve practical problems. This point can be addressed through training and with an emphasis on “boots-on-the-ground” and “eyes-on-the-rock”. Many industry geologists have the required skills, but too often receive little encouragement or mentoring in applying them.

A lack of time. Proper application of structural geology techniques requires time that is difficult to find, given the production pressures of a mining operation and the performance pressures of an exploration program. In industry, one is constantly pressured to optimize time, and structural mapping is perceived to be of secondary importance.

The aim of this course is to address the problems above, by providing the tools and confidence required to apply structural geology, and by demonstrating that a surprising amount of value can be added through sound structural interpretation of relatively small datasets. Structural mapping is largely good geological mapping, with emphasis on determining geometric evolution of rock units. Throughout the course, students will be encouraged to stretch interpretations based on limited data, integrate all available information, and derive implications for regional structure and exploration implications based on the results.

This course is organised by Nicolas Thébaud and Quentin Masurel who collectively have extensive experience in structural geology and its application for the study of mineral deposits across scale ranging from deposit through to regional scale. This course is offered to all AMIRA sponsors, including in-kind sponsors. In order to cover the range of topics associated with the use of structural geology in the mineral industry as well as to tailor this course to variable student background, it is subdivided into two parts:

■ Course 1: Back to basics (15th to the 19th of May 2017 Yamoussoukro)

Structural Geology “back to basics” is aimed at geologists **wishing to refresh their knowledge base on structural geology and field mapping techniques**. It introduces the basic principles of structural geology and tectonics with a strong focus on mineralisation. The objectives of this course are to cover the description and analysis of geological structures in the Earth’s crust and provide insights through the fundamental principles of stress, strain and rheology. The course emphasis on classic structural elements such as faults and shear zones, folds, tectonic styles and the geophysical expression providing tools and techniques critical for both field mapping and geophysical expression of common structures providing tools and techniques critical for both field mapping and geophysical data interpretation. The unit also includes advanced topics such as interpretation of geophysical data, digital measurement, visualisation and analysis of structural data.

This five-days-long course will provide hands-on-training through a combination of practical classes as well as a two days of field excursion in the Oumé-Féttékro greenstone belt and Fetekro district designed to:

- Reinforce basic structural understanding of structural geology as well as field mapping techniques;
- Show how to integrate field structural observations with regional geological and geophysical datasets;
- Demonstrate how to integrate field structural observations with an understanding of mineral systems for regional scale exploration;

The Proposed Programme

Day	Date	Course Element	Lecturer
Day 1	Monday the 15th of May (AM)	Lecture 1: Stress, strain and rheology Lecture 2: Structural Mapping	NT/QM
	Monday the 15th of May (PM)	Practical 1: Map analysis	NT/QM
Day 2	Tuesday the 16th of May (AM)	Lecture 3: Mapping folds Lecture 4: Faults and shear zones	NT/QM
	Tuesday the 16th of May (PM)	Practical 2: Faults and folds exercises, Vein analysis	NT/QM
Day 3	Wednesday the 17th of Ma (AM)	Lecture 5: Tectonic settings and mineralisation	NT/QM
	Wednesday the 17th of May (PM)	Practical 3 (Part1): Regional structural geology interpretation (geology-geophysic data integration)	NT/QM
Day 4	Thursday the 18th of May (all day)	Field excursion: (Oume Fetekro district)	NT/QM
Day 5	Friday the 19th of May (all day)	Field excursion: (Yaouré district)	NT/QM

■ Course 2: Advanced applied structural geology (22nd to the 26th of May Ghana (Mine site to be advised))

Advanced applied structural is aimed at geologists wishing to build upon their existing training in structural geology and further expand their knowledge on the structural analysis of ore deposits. This course covers fundamental principles of structural geology with emphasis on faults and shear zones, folds, structural controls on ore shoot location and geometry, tectonic settings, the geophysical expression of common structures, and structural geology in mineral exploration and resource evaluation. The unit also includes advanced topics such as applied structural interpretation of geophysical data, digital measurement, and visualisation and analysis of structural data.

This course will be run on a mine site in Ghana (TBA) and a series of lectures as well as classroom and field (pit mapping and core logging) exercises designed to:

- Reinforce which structural features to map and how to recognize and map them in the field;
- Emphasis on how to approach mine-scale mapping; and
- Demonstrate how to integrate structural field observations with an understanding of mineral systems in mine to regional scale exploration.

The Proposed Programme

Day	Date	Course Element	Lecturer
Day 1	Monday the 22nd of May (AM)	Lecture 1: Back to basics Lecture 2: Structural mapping tools and techniques Lecture 3: Structural geology, fluid flow and ore deposit formation	NT/QM
	Monday the 22nd of May (PM)	Lecture 4: Faults and shear zones Practical 1: Section interpretation (Application to orogenic gold mineralisation)	NT/QM
Day 2	Tuesday the 23rd of May (AM)	Lecture 5: Mapping folds Practical 2: Form line mapping	NT/QM
	Tuesday the 23rd of May (PM)	Practical 3: Map interpretation (application to VMS ore deposit exploration)	NT/QM
Day 3	Wednesday the 24th of May (AM)	Lecture 5: Structural evolution, early architecture and mineralisation	NT/QM
	Wednesday the 24th of May (PM)	Practical 4 : Map analysis, early architecture and mineralisation	NT/QM
Day 4	Thursday the 25th of May (all day)	Field exercise 1: Pit mapping	NT/QM
Day 5	Friday the 26th of May (all day)	Field exercise 2: working with drill core	NT/QM

Training staff

The following personnel will be involved in the delivery of the courses.

Name	Institution
Nicolas Thebaud	UWA
Quentin Masurel	UWA

The courses will be provided in both English and French, according to the native language of the presenter, however several of the training personnel are bilingual.

Registration Fees

	WAXI sponsors	non-WAXI personnel
Part 1: Back to basics	US\$2,000*	US\$2,400*
Part 2: Advanced applied structural geology	US\$2,000*	US\$2,400*
Both Part 1 and Part 2	US\$3,500*	US\$4,200*

*Price per person personnel for the full 5 days of training, including training materials.

This includes the following costs:

Items
Lunchtime Meals
Training Materials

This does not include:

Items
Evening Meals
Accommodation (but we will help in organising group accommodation for participants if needed)
Flights to and from

If you would like us to help with accommodation in Yamassoukro, please contact Corrine Debat (corinne.debat@uwa.edu.au) so that we can discuss your needs.



WAXI Structural Geology Registration Form for course 1 and 2

Company

Address

Phone

Administrative Email contact

Attendee's Name 1

Registration for course:

Attendee's Email 1

Attendee's Name 2

Registration for course:

Attendee's Email 2

Attendee's Name 3

Registration for course:

Attendee's Email 3

Attendee's Name 4

Registration for course:

Attendee's Email 4

Language: French / English / Both (Please circle)

Registration fees

	WAXI sponsors	non-WAXI personnel
Part 1: Back to basics	US\$2,000*	US\$2,400*
Part 2: Advanced applied structural geology	US\$2,000* *	US\$2,400*
Both Part 1 and Part 2	US\$3,500*	US\$4,200*

*Price per person

Total Registration Fees

Email your registration form to:

luc.siebenaller@asdm.lu;corinne.debat@uwa.edu.au

On confirmation of your places, we will ask you to transfer the registration fee to a bank account to be announced.