Stellenbosch students learn all about gold

In a five-day course of lectures and practical exercises led by Australian expert Professor Neil Phillips, Stellenbosch University (SU) honours students in applied geology were recently taught everything there is to know about the mining of and exploration for gold. It was the fourth time that the Department of Earth Sciences presented its Geology of Gold module—the only such gold course in South Africa.
A series of short courses and lectures on the topic was also presented to industry members.

'We teach students about various deposit types that are of special interest to mining and exploration companies in Southern Africa,' says course leader Neil Phillips of the Australian company Phillipsgold and an Extraordinary Professor in the SU Department of Earth Sciences. 'It combines a broad mix of descriptions of deposits, discussions of earth processes that form gold fields, and even the life skills that one needs to make a successful career in the minerals industry.'

During the honours course, he stresses the increasing importance of clear and analytical thinking in the minerals industry by using thinking exercises, puzzles, and case histories. 'As the volume of data increases greatly, thinking becomes a progressively more important way of substantially adding value to all that data,' says Professor Phillips.

Students were also exposed to the debate and controversies surrounding gold geology, such as those that surround the origin of the Witwatersrand deposits.

'Mineral exploration is becoming critical in South Africa, and the new generation of exploration geologists will be charged with making the discoveries that will help to replace some of the great gold mines of today,' believes Professor Phillips.

He says that Witwatersrand mining houses, which have led the world in many of their achievements on the large deep mines, have over the past sixty years failed to replicate the exploration successes of the 1930s and 1940s. 'The end result is that South Africa's gold production is falling significantly,' he believes.

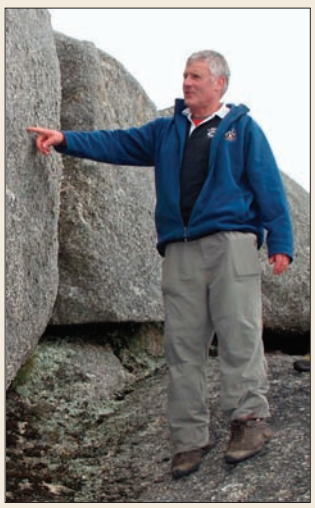
'These days, most mineral exploration does not lead to discovery. Merely following the crowd and repeating what they do is likely to result in good exploration, but without discovery.'

'The industry, the general community, and especially the universities play a substantial role in determining whether new ideas will be nurtured,' he says about the need for a new generation of mineral discoverers with the ability to think laterally and the willingness to question received wisdom.

While based in Stellenbosch, Professor Phillips also presented short courses and lectures designed for the gold industry. 'These presentations discuss the lack of gold exploration success in South Africa over recent years, and the need to take a somewhat less certain position on what we think we know about our large gold deposits,' he explains.

In view of the disappointing returns on recent exploration efforts, he encourages the industry to adopt a battery of working hypotheses rather than to focus on a single idea.

'We need to generate and seriously consider alternative models to guide gold exploration to enable us to make the next discoveries and to spawn the future mines that can sustain this $10 billion per year industry,' he urges.



Professor Neil Phillips

Professor Phillips and the staff in the SU Department of Earth Sciences are collaborating to better understand gold formation.

According to departmental chair Professor John Clemens, the unique Stellenbosch environment has a role to play in local applied gold research, because the SU Department of Earth Sciences has high-profile and accomplished researchers with experience in unravelling complex earth processes.

Among these are Professor Gary Stevens, Chair in experimental petrology as part of the South African Research Chair Initiative (SARChI). The associated research laboratory, located in the Chamber of Mines Building, is unique on the African continent and is generating research publications in high-profile journals such as Nature, Science, Nature Geosciences, and Geology.

'This adds tremendous value to the field and theoretical studies of the origins of metal deposits by allowing fresh, innovative ideas on mineral genesis to be tested in the laboratory, at the high-pressure and high-temperature conditions found in nature,' Professor Clemens explains.

E. Duvenage
Faculty of Science
University of Stellenbosch