

## **GL9551L REGIONAL METALLOGENIC ANALYSIS**

Prerequisite: GL9550B GLOBAL METALLOGENIC CYCLES IN CRUSTAL EVOLUTION

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### Course Outline:

GL9551L is designed as a reading course to complement GL9550B. The latter is delivered in lecture format and explores evidence for recurring global metallogenic cycles throughout the geological record, i.e. it deals with broad scale changes in geotectonics over time. In contrast GL9551L offers the student an opportunity to apply metallogenic theory to a specific area. It takes modern concepts of terrane analysis as a point of departure and integrates both historically known and predictive metallogenic processes into a specific regional geotectonic framework. The specific area of coverage will be decided on by student/instructor collaboration. Students will be encouraged to investigate terranes that have been well documented and that are well endowed with mineral deposits, e.g. the Neoproterozoic Abitibi Greenstone Belt, the Paleoproterozoic Penokean Fold Belt, the Mesoproterozoic Elsewhere Terrane, the Paleozoic Spanish-Portuguese Pyrite Belt, the Mesozoic Wrangellian Composite Arc Terrane, the Tertiary Green Tuff Belt in Japan.

Upon choosing a specific terrane, the student will carry out independent research to establish the detailed geotectonic framework within the area of study. Research material to incorporate available geological/geophysical maps, government reports and academic publications. This information to be synthesized into a detailed geological history and written up with supporting figures as part A of a report. Part B of the report to cover known mineral resources, clearly identifying how differing ore-types are tied to specific host-rock associations. Part C of the report to present a detailed metallogenic analysis of the terrane in question.

### Learning Outcomes

This course will familiarize the student with the problem of area selection in mineral exploration. Modern work on orogenic systems has demonstrated complex accretionary histories whereby terranes of vastly differing origin are juxtaposed. Identifying specific terrane makeup is paramount for successful exploration for specific deposit types. The detailed structural/stratigraphic framework supplies a first order context for designing exploration programs.

### Work Schedule

10 Week Course: wk 1 submit topic; wk 4 review tectonic framework; wk 6 review mineral resources; week 8 review metallogeny; wk 10 hand in final report

### Mark Assessment

20% on Participation, 80 % on Final Report, 10% grade subtraction per week for overdue final reports, reports two weeks overdue will not be accepted