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DOC.# 540

SAULT COLLEGE OF APPLIED ARTS & TECHNOLOGY
SAULT STE. MARIE, ONTARIO

COURSE OUTLINE

Course Title: GEOCHEMISTRY

Code No.: CHM 105-3

Program: GEOLOGY

Semester: 3

Date: SEPTEMBER, 1988

Author: JOHN GIGUERE

New: _____ Revision: X

APPROVED:  Sept 29/88
Chairperson Date

CALENDAR DESCRIPTION

GEOCHEMISTRY

CHM 105-3

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PHILOSOPHY/GOALS:

Geochemistry as a Science will be presented as an exploration tool with emphasis on sampling methods and statistical interpretation of analytical results.

METHOD OF ASSESSMENT:

Based on a pass grade of 60%

There will be a split of 30% on assignments and 70% on tests.

A supplemental test will be available to students who have an average of over 50% but less than 60%.

Any student with a grade of less than 50% will have a failure grade in the course.

Late Assignments:

Assignment grade = marked grade x $(0.95)^{(\# \text{ days late})}$

GRADING:

A+ - 90% or better
A - 80% - 89%
B - 70% - 79%
C - 60% - 69%

TEXTBOOK(S):

No current textbooks available.

REFERENCES:

Chemical Equilibrium of the Earth, Broecker and Oversby, McGraw-Hill
Geochemistry in Mineral Exploration, Hawkes and Webb
The Geochemistry of Gold and Its Deposits, Geological Survey of Canada, Bulletin 280

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TOPIC	PERIODS	DESCRIPTION
1		<u>Field Methods</u> <ul style="list-style-type: none">- sampling procedures- preparation of samples- shipping of samples- basic limits on sampling methods- statistical theory of geochemistry- identification of an anomaly based on statistical methods (Applied Statistics)- assignment using the "MINITAB" VAX II computer- interpretation of statistical results as to the significance of multiple populations- correlation of anomalous results in assorted metal surveys- probability of a major ore source based on statistical analysis- term paper based on the above topic
2		<u>Basic Principles of Geochemistry</u> <ul style="list-style-type: none">- Geochemistry Environments<ul style="list-style-type: none">- primary environment- secondary environment- Rock Forming Elements<ul style="list-style-type: none">- relative abundances- Ore Elements<ul style="list-style-type: none">- relative abundances in normal rocks- background values- threshold values- significant and non-significant anomalies- Pathfinder Elements

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TOPIC	PERIODS	DESCRIPTION
3		<u>Primary Dispersion</u> - Syngenetic Patterns - geochemical provinces - local syngenetic patterns - Epigenetic Patterns - wall-rock anomalies - leakage anomalies - gaseous dispersion patterns.
4		<u>Weathering and Soils</u> - Weathering Processes - physical - chemical - biological - Weathering of Rocks - initial composition - weathering products - Soil Formation - soil profiles - principle soil groups and their geographic distribution - Weathering of Ores - initial composition - products of weathering
5		<u>Integrated Exploration Programs</u> - selection of area - exploration sequence - choice of exploration methods - role of applied geochemistry, regional appraisal, reconnaissance surveys, detailed surveys - organization of geochemical program