Advanced X-ray Spectroscopy, 2 credits

Instructor: Ken Severin, kpseverin@alaska.edu
Office 324 NSB, X5821

Office hours by appointment. Please try email to set one up. I can often be found in the probe lab, 156 NSB, X5820
Home phone: 455-6552, cell 978-6369, calls are OK between 9am and 11pm

Class will meet 9-10 AM Tuesdays, Room 306 Reichardt (Geology Library)

The purpose of this course is to allow the students to expand their knowledge of electron microprobe and XRF analytical techniques. Topics to be covered include standard and sample preparation, quantification methods, x-ray mapping and classification, error analysis, and the presentation of analytical methods to others through a wiki.

Grading is Whole Letter Grade Only. Late assignments will not be accepted. Working together is encouraged, but the work you turn in, and your final project, must be your own within the guidelines of Student Conduct as stated in the current UAF catalog.
Grades will be assigned as follows:
A: 90-100%
B: 80-89%
C: 70-79%
D: 65-69%
F: <65%

Grades are based on
10% Oral presentation of project proposal
15% Written project proposal
15% Written progress report
20% Written final project report / cookbook
15% Oral final project presentation
10% Wiki product (cookbook)

10% Written and oral evaluations of fellow students' project proposals (19 March)

5% Instructor evaluation of participation

Class Schedule

26 January – General class information, requirements, scheduling.
2 February – Preliminary proposal outline, proposal and review format.
9 February – Oral review of preliminary project proposals.
16 February – Oral presentation of project proposal; written proposal due by 5 pm 26 February.
23 February – TBA
2 March – .Lecture - TBA
9 March – Written and Oral evaluation of fellow students' project proposals - Written evaluation due by 5pm 19 March
16 March – No Class (Spring Break)

23 March – Lecture - TBA
30 March – Lecture - TBA
6 April – Oral Project Progress reports
13 April – TBA
20 April - Lecture - TBA
27 April - Lecture - TBA
4 May - Final Project Presentations - Final paper due by 5pm 11 May

We have seven meetings to devote to lectures. Possible topics include Standards, what are they and where do you get them, Hand held xrf (pxrf) advantages and limitations, Detectors and how to optimize them, How to organize and format WIKI page, or other topics that may come to mind.

Final Paper Due May 11 – 5pm, hard copy to Ken and e-copy on AILwiki.

And the last 5% is class participation as determined by the instructor.

A written report on the project is required. It should be a 'cookbook' style paper that will assist future users in pursuing the type of study the student has done. The written report is due May 11 by 5pm.

There is no required text for this course. Suggested texts (available from the instructor) include:

Potts PJ. 1987. A Handbook of Silicate Rock Analysis. Blackie. Glasgow, UK. 622 pages. A great reference but WAY pricey (and I think out of print now).

Scott, VD, Love, G, and Reed, SJB. 1995. Quantitative Electron-Probe Microanalysis. Second Edition. Ellis Horwood, New York. 311 pages.

The emphasis of the final project should be less on the "scientific meaning" of the project and more on "how do I get the numbers out of the machine, and how good are they?" An example might be "I wanted to measure F in apatite. This is how I dealt with interferences and if you follow my method you can get numbers this good." The fact that the F numbers let you say something about the evolution of Denali is interesting, but irrelevant to this class. Feel free to use the data gathered in this class for other **non-commercial** projects or classes you may have. **If you have any thoughts about using AIL equipment commercially, contact me first so I don't get in trouble** (and believe me, I won't go by myself!). It is possible to use the equipment for commercial purposes, but there are certain University regulations that must be followed.

Students will conduct themselves in accordance with the "Student Code of Conduct" as put forward in the applicable University of Alaska Fairbanks Catalog.

Disabilities Services: The Office of Disability Services implements the Americans with Disabilities Act (ADA), and insures that UAF students have equal access to the campus and course materials. The assistants and I will work with the Office of Disabilities Services (203 WHIT, 474-7043) to provide reasonable accommodation to students with disabilities.

This syllabus is a contract between you as a student and me as an instructor and it cannot be changed after the first lecture. If you do not wish to be follow it then do not take the class.