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## A Whole Rock Approach to Teaching Mineralogy

- 🔬 Chemistry Basics
- 🔬 Crystallography
- 🔬 Introduction to Optics
- 🔬 Igneous, Sedimentary & Metamorphic Minerals and Rocks
- 🔬 Mineral hand sample ID
- 🔬 Rock hand sample ID (simple classification)

- 🔬 Petrographic analysis
- 🔬 Metals and Ores

### Course Specifics

- 🔬 Six contact hours
- 🔬 Short lectures
- 🔬 Guided discovery lab exercises
- 🔬 Detailed mineral descriptions
- 🔬 Semester project: Guided petrographic description
- 🔬 Three tests and lab practical exams
- 🔬 One-on-one final lab practical

### Equipment and Samples

- 🔬 Ward's University Collection Mineral, Rock and North American Rock suites with accompanying thin sections
- 🔬 Olympus student polarizing light microscopes

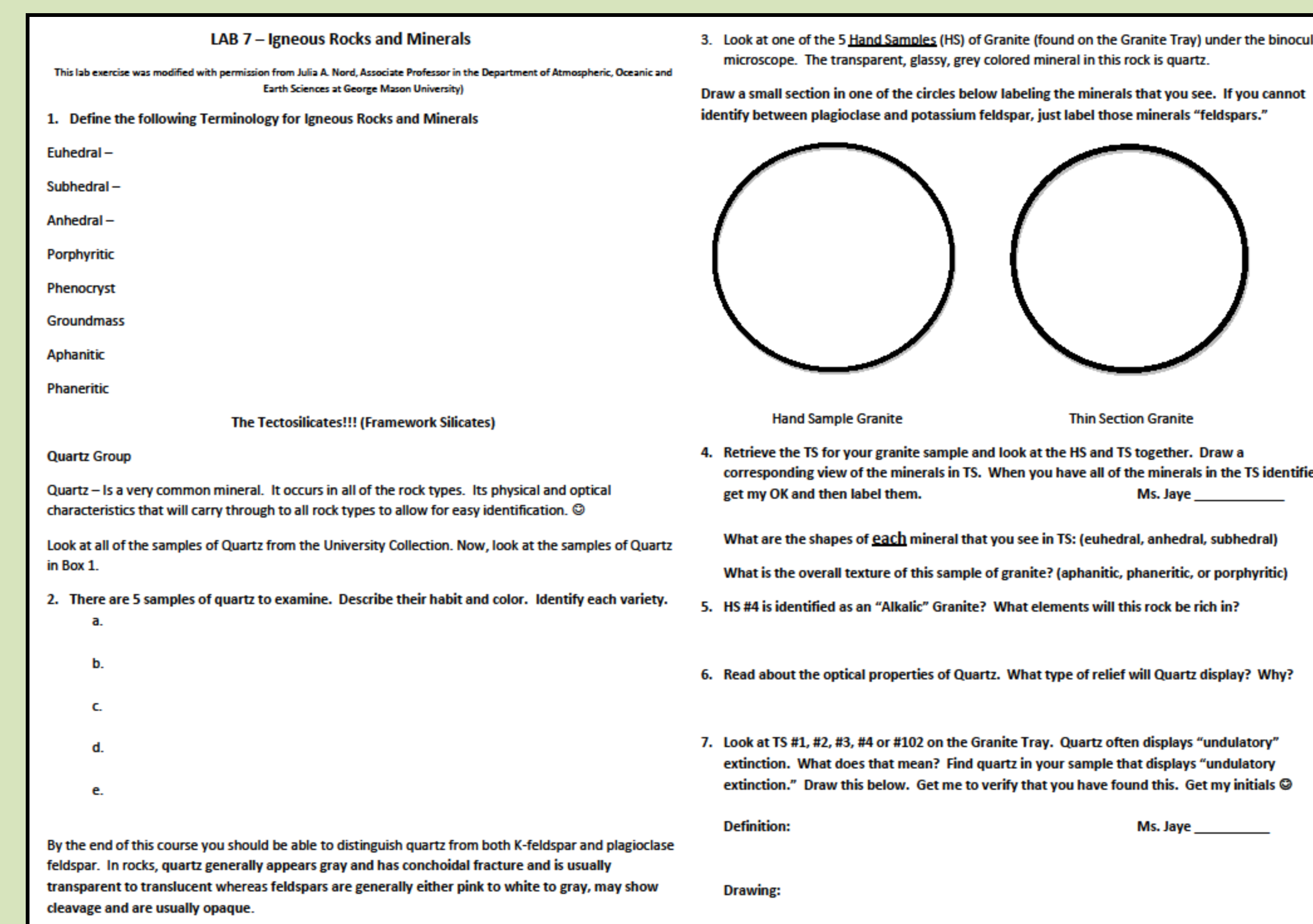
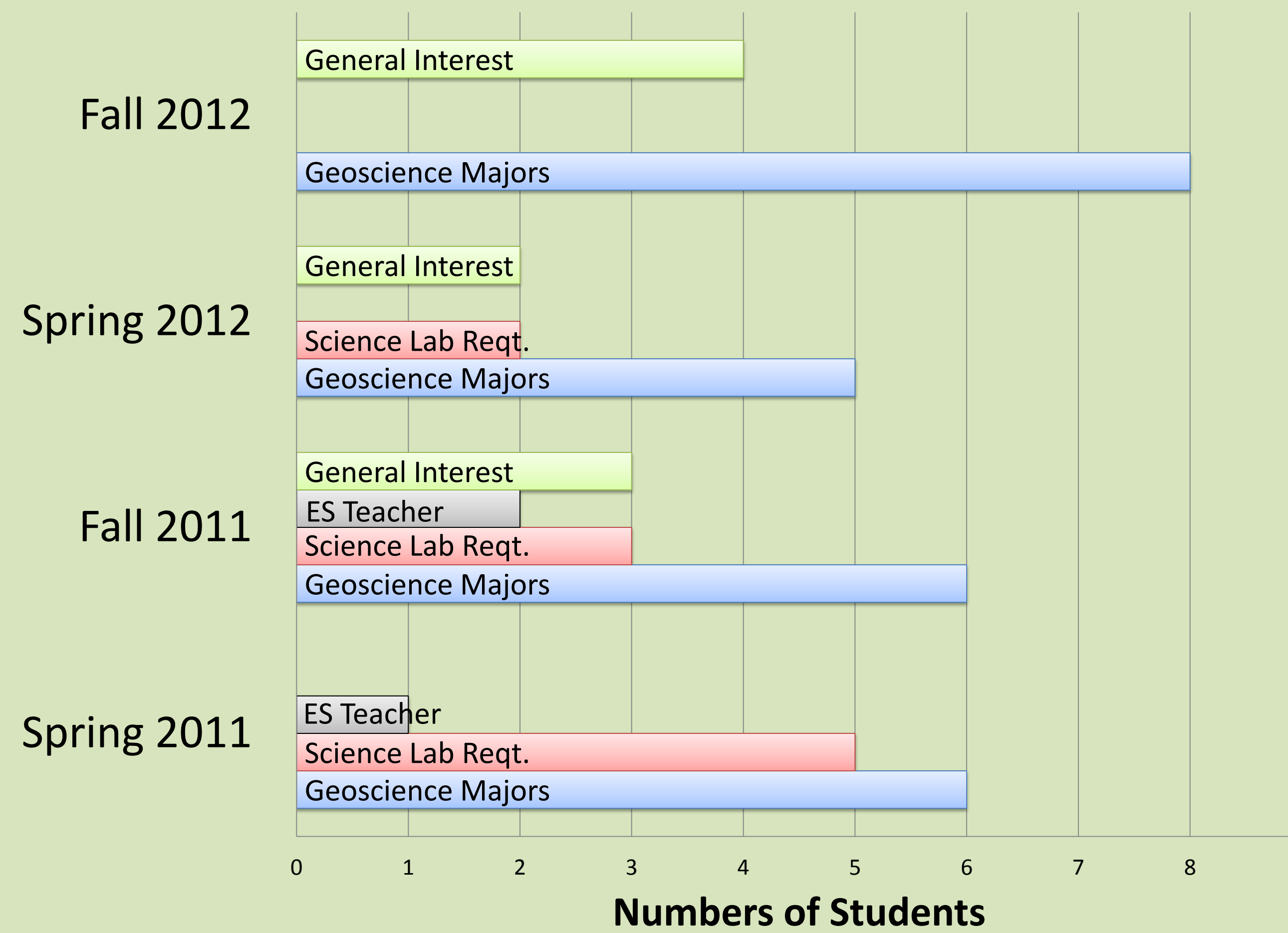
Development of this course benefited greatly from



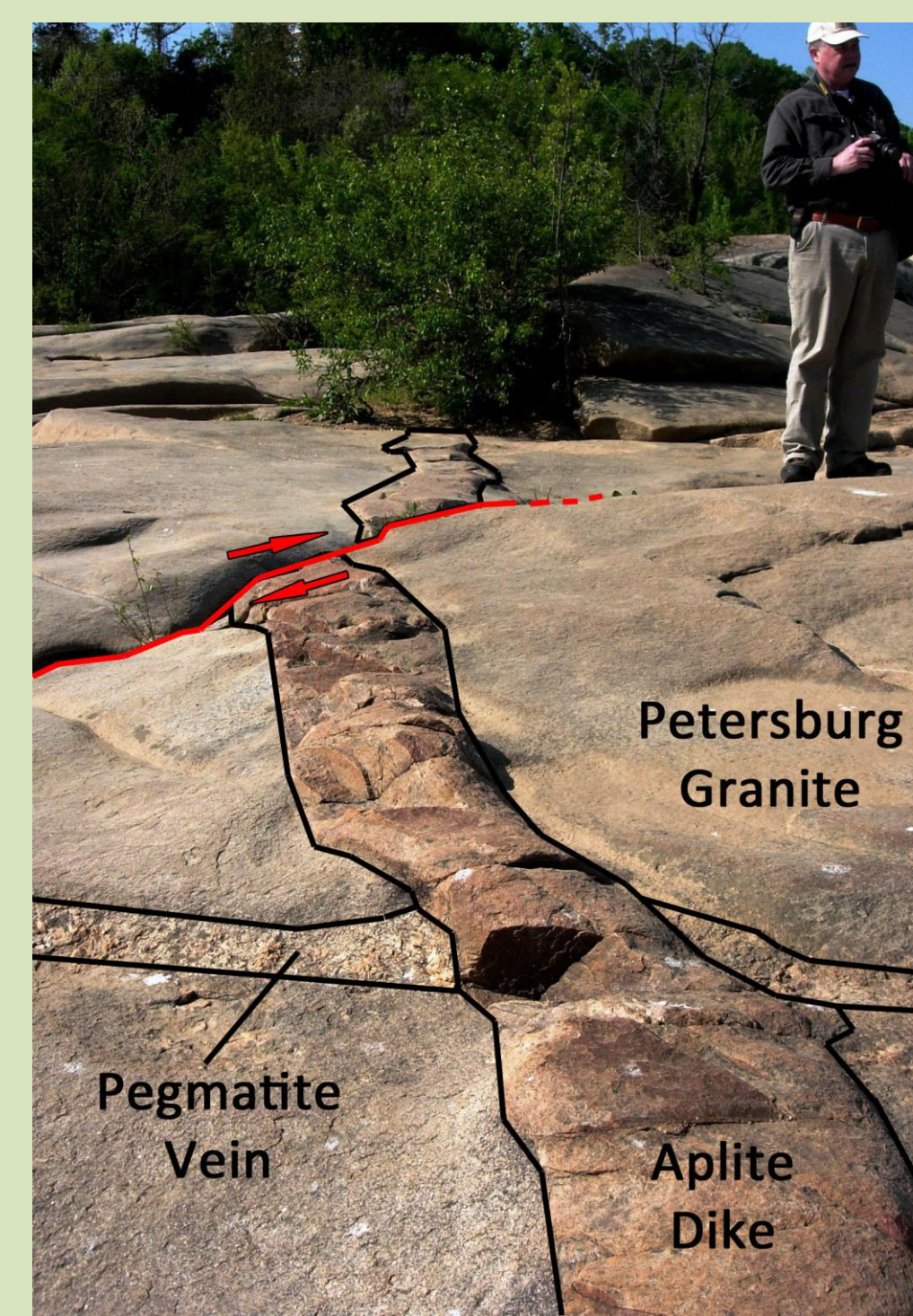
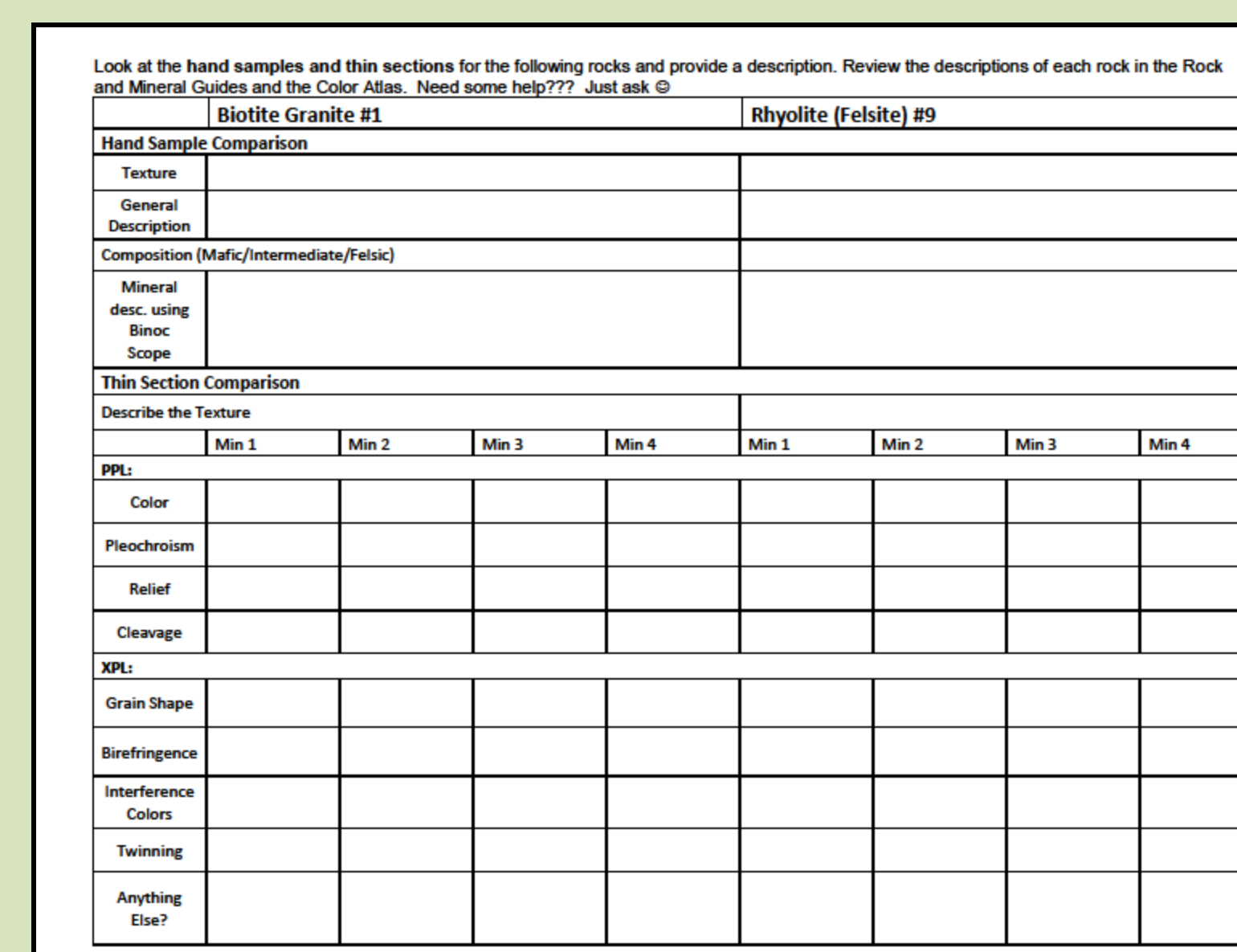
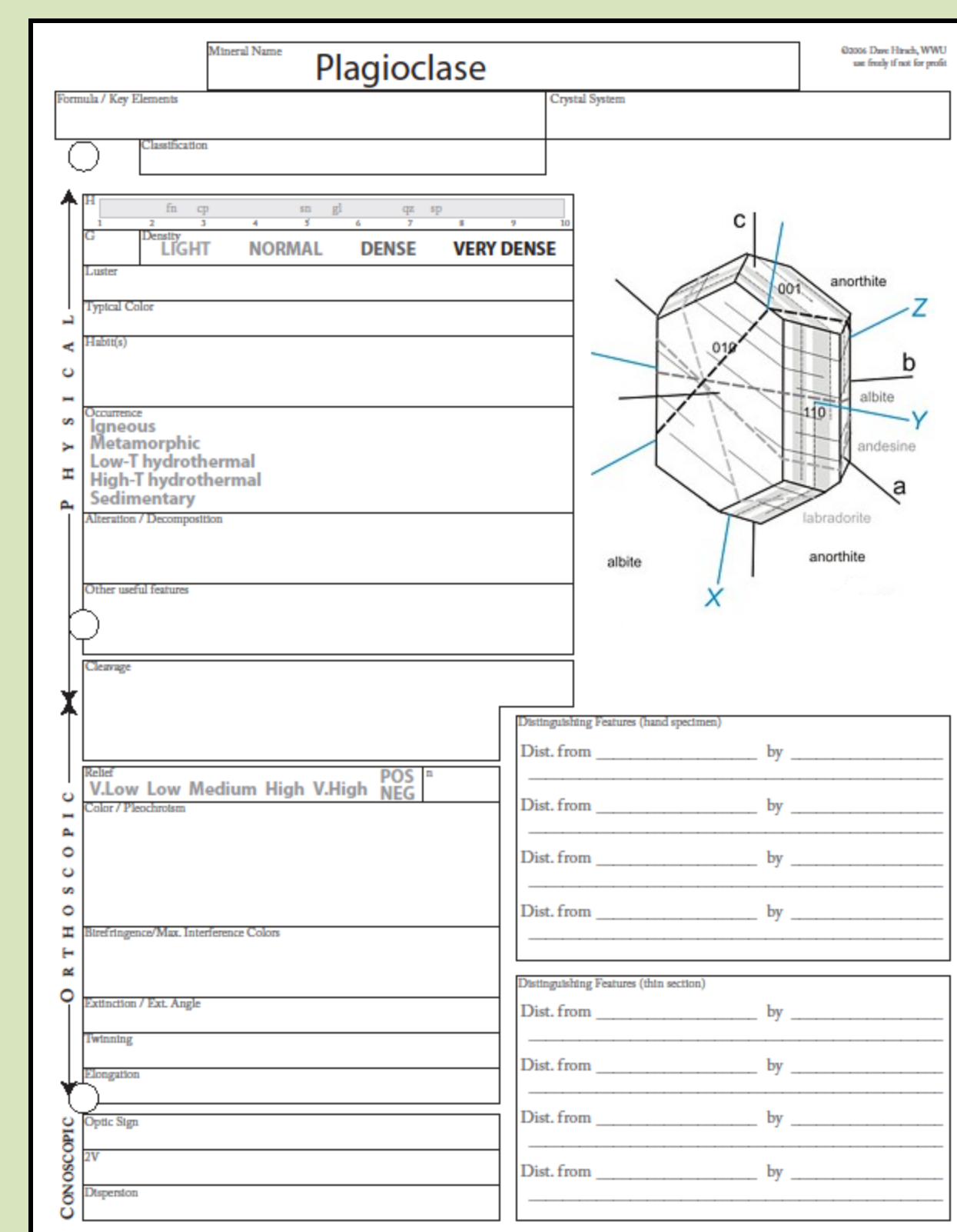
Teaching Mineralogy, Petrology and Geochemistry in the 21<sup>st</sup> Century Workshop; August 2011, University of Minnesota, Minneapolis

And resources available on the website:  
<http://serc.carleton.edu/NAGTWorkshops/index.html>

## Who Is Taking Mineralogy at NOVA?



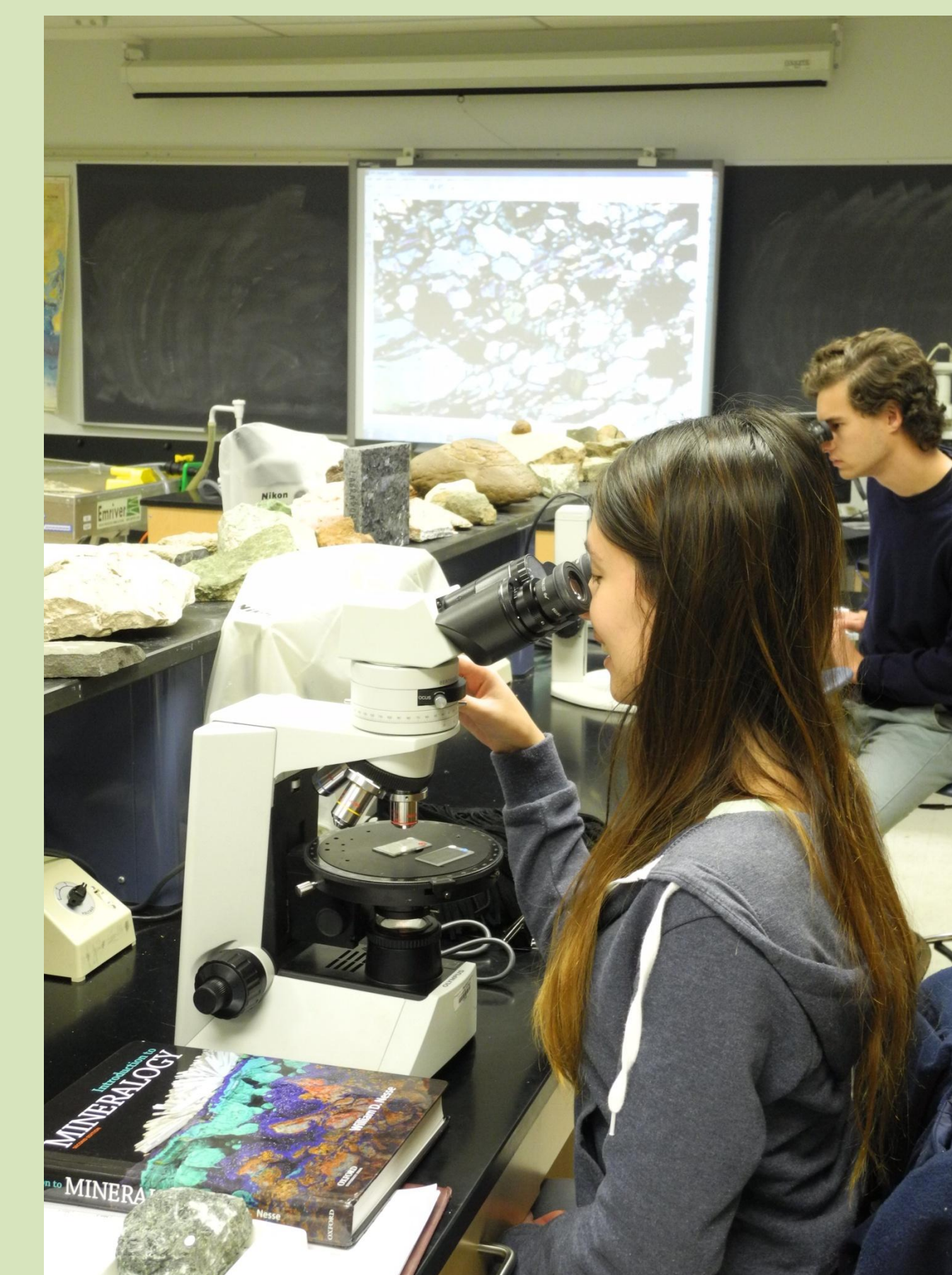
## Sample pages from student lab manual and notebook



General Interest Student Bob Cooke looking at the features found in an exposure of the Petersburg Granite, Richmond, VA



Mineralogy Students in the Morefield Pegmatite Mine  
Amelia, VA



Decided geoscience majors Lucy Varley and Brendan Soles in lab

## Abstract

A fully transferrable Mineralogy course is being successfully taught on the Annandale Campus of Northern Virginia Community College (NOVA). The key to success has been striking a balance in offering a class that provides the rigor needed for the student anticipating becoming a Geology major and fulfills the needs of the diverse student population at a two-year college (2YC). The course has attracted second semester introductory geology students, offering a new option for the second lab science sequence. Geology and mineral enthusiasts in the community as well as potential and current secondary school Earth Science teachers are common enrollees. Hand sample identification, a strong optical component, an introduction to petrology, and field trips build the foundation of this integrated lecture/lab course. Enrollment has been consistent (10-15 students) every semester since first offered during the Spring of 2011. Some articulation agreements are already in place and we plan to expand to all of the Virginia four-year schools.

Developing a course from scratch can be a daunting challenge; determining the approach to take for this course benefited greatly from the support of colleagues and ideas exchanged at the **National Association of Geoscience Teachers (NAGT) On the Cutting Edge, Professional Development for Geoscience Faculty 2011 workshop in "Teaching Mineralogy, Petrology and Geochemistry in the 21st Century."** Emphasis at the workshop was placed on activity based teaching in the classroom and also in the field. Success was realized quickly in this course using the "Just In Time" instructional method of knowledge and immediate practice available in a draft Introductory Mineralogy Lab Manual by Dr. Julia Nord, Associate Professor, George Mason University (also in this Special Topics Section). All of these great ideas and active teaching strategies have been infused into this 2YC Mineralogy course focusing on physical and optical identification of the rock forming minerals and common rocks in the lab as well as taking advantage of the great natural exposures available in Virginia and Maryland to teach in the field.

## Teaching advanced geoscience courses at NOVA has led to a new partnership and degree program

**NOVA** Northern Virginia Community College  
Annandale Campus



Internships and Part-time employment

## PHYSICAL SCIENCE TECHNOLOGY Associate of Applied Science Degree (Draft)

Two Years	Credits		
<b>1st Semester</b>		<b>3rd Semester</b>	
College Chemistry I	4	General Biology I	4
College Comp I	3	GIS I	4
Physical Geology	4	Field Studies	1
Math Elective	3	Chm. Instr. Analysis	3
Lifetime Fitness	1	Coop. Education	3
College Success	1	Elective	3
<b>Total</b>	<b>16</b>	<b>Total</b>	<b>18</b>
<b>2nd Semester</b>		<b>4th Semester</b>	
College Chemistry II	4	Electives	6
Intro. To Comm.	3	Field Techniques	1
Historical Geology	4	Hard Rock Tech.	1
Mineralogy	4	Core Description	1
Elective	3	Grain Size Analysis	1
<b>Total</b>	<b>18</b>	Micropaleo Tech.	1
		Paleontology	4
		<b>Total</b>	<b>15</b>

Physical Science Technicians