

Monday, January 17th, 2011

Messages

January 17, 2011

Objectives Schedule Project Old Exams Gem Notes Handouts Bibliography Links Messages

Syllabus

• Labs do not meet the first week of class. They begin next week.

January 17, 2011

• The Glenn and Martha Vargas Gem and Mineral Collection is now online! Browse and/or search 6300+ gemstones and mineral specimens and 5 subcollections. Got an iPhone? View part of the collection with a \$0.99 App available as "Gems and Minerals by Varietal" through the iTunes store.

January 17, 2011

• The Featured Article in the August, 2005 Lapidary Journal is about this class! Jamie Janczak, a former student turned free-lance writer, writes about faceting and her experiences in lab.

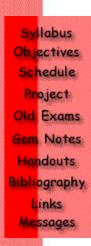
January 17, 2011

- Welcome to the Spring 2011 Gems and Gem Minerals class! From this home page you can navigate to course information, lecture handouts, on-line lecture notes and much more. Most announcements will henceforth be posted on the UT Blackboard site for this class.
- The spinning ball and stick model above shows the arrangement of carbon atoms in diamond. It and other minerals are easily visualized with Xtaldraw, now downloadable as Drawxtl, a powerful (and free) graphics program that displays crystal structures.

Messages | Syllabus | Objectives | Schedule | Project | Old Exams | Gem Notes | Handouts | Bibliography | Links



GEO347K Objectives



What is a gem? What is a mineral?

How do we tell one mineral from another, or from synthetic materials?
 - Methods of ID, physical and optical properties

From where does their beauty arise?

- Crystallography and optics

How are gemstones shaped and polished?

- Lapidary arts

Where do gems come from and how are they found?

- Important gem minerals and the geology of major gem localities

Who and what determines the value of gems?

- Physical attributes, economic trends, synthetics and imitations

Messages | Syllabus | Objectives | Schedule | Project | Old Exams | Gem Notes | Handouts | Bibliography | Links

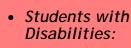
GEO 347K Schedule, Spring, 2011

Syllabus.	DATE	TOPIC	LAB	READING	
Objectives	Jan. 19	Course Intro.; What is a Gem?		Ch. 1, p. 9-10	
Schedule Project	21	Physical Properties	No lab first week	Ch. 5, 6, 7	
Old Exams					
Gem Notes Handouts	24	Atoms, Elements & Crystals (Aug. 30 is last day of official adds/drops)	Physical Properties & Intro. to Cab.		
Bibliography	26	Light & Color	Lab (Rm. 1.110)	Ch. 3	
Links Messages	28	Light & Color in Gems		Ch. 8	
	31	Labor Day Holiday		Ch. 8	
	Feb.	Phenomena in Gems	Physical Properties, Color	Ch. 8	
	2	Phenomena in Gems II		011. 0	
	4	(12th class day; last day to drop for a possible refund)		Ch. 8	
	7	Crystal Shapes		Ch. 4	
	9	Symmetry & Crystal Systems	Quantifying Color (or Crystal	Ch. 4	
	11	Summary & Review	Systems and Symmetry)	Review Sheet, Old Exams	
	14 Hour Exam 1				
	16	Refraction of Light in Minerals (last day to drop w/o possible penalty)	Quantifying Color (or Crystal Systems and Symmetry)	Ch. 9; handout	
	18	The Critical Angle		Ch. 9	
	21 23	Faceting Angles		Ch. 19 Ch. 19	
		Gemstone Design Double Refraction &	Lab Exam		
	25	Polarization		Ch. 10	
	28	Optic Axis(es) & Sign		Ch. 7, p. 96- 109.	
	March 2	Polarization & Crystal Systems	Optical Properties	Ch. 7, p. 96- 109.	
	4	Pleochroism		Ch. 7, p.108 - 110.	
	_	Optical properties & faceting			
	7	considerations			
	9	Synthesis & Summary	Mineral I.D. II	Review Sheet, Old Exams	
	11	Hour Exam 2			

SPRING BREAK						
21	Geology of Gem Deposits I		Ch. 2			
23	Geology of Gem Deposits II (last day to Q drop with approval)	Faceting, Cab. Lab (Begin 1st gemstone)	Ch. 2			
25	Geology of Gem Deposits III	Ch. 2				
			011. 2			
28	Quartz					
30	Quartz (Chalcedony) and Opal	Faceting, Cab. Lab	Course notes			
April	Beryl - Emerald	(Must finish pavilion this week to continue)				
1		commdey				
4	Beryl - Aquamarine et al.					
6	Corundum: Ruby	Faceting, Cab. Lab or Paper	Course notes			
8	Sapphire					
11	Sapphire II					
13	Diamond I	Faceting, Cab. Lab or Paper	Course notes			
15	Diamond II					
18	Diamond III					
20	Tourmaline	Mineral I.D. III	Course notes			
22	Garnet	(Fluorescence)				
25	Topaz	Mineral I.D. IV				
27	Peridot and Jade	(Inclusions); LAB REVIEW	Course notes			
29	Pearls					
May 2	Spinol and Procious Motals					
May 2 4	Spinel and Precious Metals Projects Due; Evaluations	Lab Final	Course notes			
6	Review for Final Exam	Lastina	Old Exams			
13	FINAL EXAM 9-12 AM					

Messages | Syllabus | Objectives | Schedule | Project | Old Exams | Gem Notes | Handouts | Bibliography | Links

Spring 2011 Syllabus GE0 347K Gems and Gem Minerals						
Syllabus Objectives	• Lecture:	10:00 -11:00; M, W, F; GEO 3.116				
Schedule Project Old Exams Gem Notes Handouts Bibliography Links Messages		All Labs meet in GEO 3.102 (Lab Syllabus link)				
	• Labs: (Rm. 3.102)	 Mon. 12-2 (#26875)(Michael); 2-4(#26880)(Michael) Tues. 2-4 (#26890)(Michael) Wed. 12-2 (#26885)(); 3-5 (#26900)() Th. 11-1 (#26895)() 				
	• Instructor:	Dr. Mark Helper, GEO 4.112; 471-1009; helper@mail.utexas.edu				
	• Teaching Assistants:	Michael Kallstrom, GEO 3.102; mjkallstrom@mail.utexas.edu				
	• Office Hours:	M, W, Fr; 9-10 and whenever my door (GEO 4.112) is open.				
	• Grading:	 Lab = 35% Exam I = 15% Exam II = 15% Final Exam = 20% Term Project = 15% 				
	• Prerequisites:	You must be a registered student to participate in the laboratories for this class. This class does not count toward a degree in Geological Sciences.				
	• Required text:	Read, Peter G., <u>Gemmology</u> ; 3rd edition. Elsevier, 324 pp. Copies are on reserve in the Geology Library.				
	• Recommended text:	Cipriani, C. and Borelli, A., 1984. <u>Simon and Schuster's Guide to Gems and Precious Stones</u> . Simon and Schuster. A handy, inexpensive, superbly illustrated book that is useful in lab.				
	• Online Notes and handouts:	Notes for <i>material presented during lectures in the last half of the course</i> , are available on this web site. Many class handouts are available here as well.				
	• Other Items:	Term Projects: Can be 2 or more faceted stones, several cabochons, a combination of both, or a paper on a topic of your choosing (subject to approval). See the project description.				
	• Web Sites:	The class website address is http://www.geo.utexas.edu/courses/347k. Most of the material posted there is also accessible at the class Blackboard site.				
	• Academic Integrity:	Scholastic dishonesty of any type will not be tolerated. Violators will be referred to the Office of the Dean of Students for possible disciplinary action, which in the extreme may result in expulsion from the University.				



Please notify me of any modification/adaptation you may require to accommodate a disability-related need. You will be requested to provide documentation to the Dean of Students' Office, in order that the most appropriate accommodations can be determined. Specialized services are available on campus through Services for Students with Disabilities.

Messages | Syllabus | Objectives | Schedule | Project | Old Exams | Gem Notes | Handouts | Bibliography | Links

Updated 01/17/11

Syllabus

Objectives

Schedule

Project

Old Exams

Gem Notes

Handouts

Bibliography

Links

Messages

GEO 347K Semester Project

You have 4 options to choose from for the semester project. These are:

- OPTION 1: One or more faceted gemstones;
- OPTION 2: Six or more cabochon gemstones;
- OPTION 3: A short paper on a topic previously approved by Dr. Helper.

REQUIREMENTS:

OPTION 1: The eight-sided brilliant you will all cut as your first stone may be turned in for your project. When grading I look for the following:

- A good polish on all facets, especially the table.
- No chips on the culet, corners or along the edges.
- Good placement of the facets. Are the points or lines of intersection even?
- Correct facet size. Are all facets of a certain type (pavilion mains, crown breaks, etc.) the same size?

With each gemstone INCLUDE A CARD with the following information:

- a. mineral (if it is synthetic, say so)
- b. type of cut (the first gemstone you cut is an 8-sided brilliant)
- c. index used (32 index for the first gemstone)
- d. critical angle
- e. pavilion angles
- f. crown angles
- g. polishing lap and polishing agent(s)(cerium oxide lap for quartz)
- h. finished size and weight

Please try to present gemstone projects in a neat and tidy package - gems don't look particularly attractive or alluring in baggies stapled to scraps of paper.

OPTION 2: The following criteria must be met:

- At least one set of matching cabs. made of the same material and the same size.
- At least one freeform cab.
- At least three cabochons of different standard sizes.

When grading I look for the following:

- There should be a good polish over the entire dome of the cab.
- The dome should be smooth and symmetrical, with no flat spots.
- The outline of the standard cabs should be symmetrical, well rounded, and as close as possible to the standard size.
- The set of cabs should be identical in shape and size and complementary in appearance.
- The placement of the cab on the rough should produce an interesting or attractive cab.

For each cabochon or pair of cabochons INCLUDE A CARD with the following information:

- a. mineral and species
- b. size (if standard) and/or shape description (if freeform)
- c. polishing wheel and polishing agent

Please try to present gemstone projects in a neat and tidy package - gems don't look particularly attractive or alluring in baggies stapled to scraps of paper.

OPTION 3: Write a short (no more than 6 pages) paper on a topic related to gems or gem minerals. A good place to start is the online gems bibliography of the UT Geology Library, or the reference list for the online notes. Another good launching point is the online searchable index for Gems & Gemology, the premier publication of its type, linked to the class web site. *I am happy to assist in narrowing the focus of a topic, or to suggest a topic should you have trouble identifying one yourself.*

Papers should be written in a science style; references should be cited in the text, after or within

sentences that contain factual or inferential content, and compiled within a "References cited" page at the end of the paper. Internet sources are okay, but in addition you must also have two "hard" (i.e. book, journal, periodical, etc.) sources.

Once you have a draft, take it to the Undergraduate Writing Center, 211 Flawn Academic Center, for critique and improvement. They notify me in writing when a student has come to see them, and I strongly encourage all papers undergo this valuable process.

One final note: In recent years there has been an increase in the number of papers I receive that plagiarize sources. Any student who turns in such a paper will be required to sign a Discipline Referral For Scholastic Dishonesty, which I transmit to the Office of the Dean of Students for disciplinary action. The normal penalty is a failing grade for the course. I make no exceptions, nor offer second chances.

All projects are due 10:00 AM, Wednesday, May 4. Completed projects will be accepted (and quickly returned with a grade!) any time during the semester. Late projects will be assessed a penalty of one letter grade (10 points) per day.

Messages | Syllabus | Objectives | Schedule | Project | Old Exams | Gem Notes | Handouts | Bibliography | Links