

Report on March 26, 2006 meeting of the Academic Committee on Geological Sciences and Geography

The Regents Academic Committee on Geological Sciences and Geography met on March 26, 2006 at the Lawrenceville Campus of GPC (soon to be Georgia Gwinnett College).

A committee member who was unable to attend has asked me if I could share some of my notes from the meeting. I will go from memory here, so these are not official minutes.

Attendees:

I.N. Osondu, Chair 2004-2006, Geography, Fort Valley

N. Maasha, Past Chair 2002-2004 (?), Geology, Coastal GA CC

Harry Trendell, Past Chair 2000-2002 (?), Geography, Kennesaw

Lewis Rogers, Geology, Gainesville (retired)

Jim Engstrom, Geography, GPC

John Anderson, Geology, GPC

Pamela Gore, Past Chair 1996-1998, Geology, GPC

Agenda included a discussion of the need to develop by-laws. Maasha has a copy of by-laws from another committee and will revise them as needed and forward them to the group for comments, discussion, etc.

It was mentioned that Georgia State University no longer has a Geography degree and that the Geography program has been combined with Geology. The Georgia State website does not yet reflect this change on either the departmental page or the college-wide list of degrees and programs.

We discussed the new high school Earth Systems course, which is to be offered as one of 7 core curriculum science courses in high schools. Dr. Dorothy Zinsmeister has requested a response from our committee. I would like to ask each of you to take a few minutes and look at the topics proposed for the new course and see if they are missing anything, or if there are any changes that you would like to recommend. I have been appointed to collect your comments and write the committee response to the Board of Regents. This was due about a month ago, but we are going to do it ASAP and try to get it to them this week or next, so please send me your comments.

Please go to <http://www.georgiastandards.org/science.aspx> and scroll to the bottom of the page. Look for Earth <<http://public.doe.k12.ga.us/DMGetDocument.aspx/Earth%20Systems.doc?p=4BE1EECF99CD364EA5554055463F1FBBF5D074D5FB1F2CAEB3B63B3ECB220CDD26C2114F3C57D8D2806A2AC867C6E89A&Type=D>> Systems. Click on that and open the file and scroll down until you get to Co-Requisite Content. I will paste it here for convenience.

Co-Requisite Content

SES1. Students will investigate the composition and formation of Earth systems, including the Earth's relationship to the solar system.

- a. Describe the early evolution of the Earth and solar system, including the formation of Earth's solid layers (core, mantle, crust), the distribution of major elements, the origin of internal heat sources, and the initiation of plate tectonics.
- b. Explain how the composition of the Earth's crust, mantle and core is determined and compare it to that of other solar system objects.
- c. Describe how the decay of radioactive isotopes is used to determine the age of rocks, Earth, and solar system.
- d. Describe how the Earth acquired its initial oceans and atmosphere.
- e. Identify the transformations that make up the rock cycle, hydrologic cycle, and carbon cycle.

SES2. Students will understand how plate tectonics creates certain geologic features, materials, and hazards.

- a. Distinguish among types of plate tectonic settings produced by plates diverging, converging, and sliding past each other.
- b. Relate modern and ancient geologic features to each kind of plate tectonic setting.
- c. Relate certain geologic hazards to specific plate tectonic settings.
- d. Associate specific plate tectonic settings with the production of particular groups of igneous and metamorphic rocks and mineral resources.
- e. Explain how plate tectonics creates and destroys sedimentary basins through time.

SES3. Students will explore the actions of water, wind, and gravity that create landforms and systems of landforms (landscapes).

- a. Describe how surface water and groundwater act as the major agents of physical and chemical weathering.
- b. Explain how soil results from weathering and biological processes acting on parent rock.
- c. Describe the processes and hazards associated with both sudden and gradual mass wasting.
- d. Relate the past and present actions of ice, wind, and water to the types and distributions of erosional and depositional features in landscapes.
- e. Identify preserved erosional and depositional features and use them to reconstruct preexisting landscapes.

SES4. Students will understand how rock relationships and fossils are used to reconstruct the Earth's past.

- a. Describe and apply principles of relative age: superposition, original horizontality, cross-cutting relations, and original lateral continuity.
- b. Identify the features of each type of unconformity: disconformity, angular unconformity, nonconformity.
- c. Interpret the geologic history of a succession of rocks and unconformities.
- d. Apply the principle of uniformitarianism to relate sedimentary rock associations and their fossils to the environments in which the rocks were deposited.
- e. Correlate discontinuous rock units using a variety of methods (e.g., the principle of fossil succession, radiometric dating, and paleomagnetism).

SES5. Students will investigate the interaction of insolation and Earth systems to produce weather and climate.

- a. Explain how latitudinal variations in solar heating create atmospheric and ocean currents that redistribute heat globally.
- b. Explain the relationship between air masses and the surfaces over which they form.

- c. Relate weather patterns to interactions among ocean currents, air masses, and topography.
- d. Describe how temperature and precipitation produce the pattern of climate regions (classes) on Earth.
- e. Describe the hazards associated with extreme weather events and climate change (e.g., hurricanes, tornadoes, El Niño/La Niña, global warming).
- f. Relate changes in global climate to variation in Earth/Sun relationships and to natural and anthropogenic modification of atmospheric composition.

SES6. Students will explain how life on Earth responds to and shapes Earth systems.

- a. Relate the nature and distribution of life on Earth, including humans, to the chemistry and availability of water.
- b. Relate the distribution of biomes (terrestrial, freshwater, and marine) to climate regions through time.
- c. Explain how geological and ecological processes interact through time to cycle matter and energy, and how human activity alters the rates of these processes (e.g., fossil fuel formation and combustion).
- d. Describe how fossils provide a record of shared ancestry, evolution, and extinction that is best explained by the mechanism of natural selection.
- e. Identify the evolutionary innovations that most profoundly shaped Earth systems: photosynthesis and the atmosphere; multicellular animals and marine environments; land plants and terrestrial environments.

Let me know if there is anything important that is missing. If there is anything there that does not belong there, and if you have any suggestions or comments. Or anything else you would like to say about this. Please try to get your comments to me this week.

You may also wish to click the SURVEY link just above the course, and post your own comments, in addition to sending them to me.

<http://admin.doe.k12.ga.us/gadoe/SLA/GPSCCommentSurvey.nsf/PreSurvey?OpenForm>

While discussing this course, we discussed that Tim Long at Georgia Tech was working on plans for a grant proposal to develop a course to teach high school teachers the science content that they would need in order to teach

the Earth Systems Course topics listed in the standards above. It looks as though NSF is not interested in funding a state-based course like the one that we would need. We would like to form a cooperative group to work on this and to look for sources of funding. Attendees at the meeting mentioned that the National Geographic was funding something similar, to set up a Geographic Alliance in each state. Another attendee suggested that we look to PRISM for funds.

We also discussed a possible Geography Program and major to be proposed at GPC. Jim Engstrom would like to propose a Geography Program, and was looking for input on the best courses to offer for transfer to 4-year institutions. We looked at several college catalogs online to see courses offered at 1000 and 2000 level. Each institution appears to have a slightly different slate of courses at this level. We would probably need a letter from 4-year institutions that they would accept these courses into their programs, when students transfer. Several geography representatives present at the meeting thought that this would be possible.

We looked at handouts of the B.S. degree in Environmental: Spatial Analysis at Gainesville State College.

It was proposed that we meet at a time other than the GAS meeting, due to the conflict with SE-GSA that has occurred for the past several years.

Lewis Rogers suggested our next meeting be at Gainesville College which would include a tour of their new GIS lab.

Chair for the upcoming year? Needs to be a Geologist. We alternate, and current chair is a Geographer.

Lewis Rogers volunteered his colleague Chris Semerjian at Gainesville to be Chair, and said that he would assist him. We need to have a confirmation from Chris. We have an alternate if this does not work out.

The official list of those on the committee according to the BOR (as provided by our VPAA's) is posted online at <http://www.usg.edu/academics/comm/geosci/rebs.phtml>

The people currently on our listserv are as follows. Let me know if we need to add or delete anyone (due to retirements, etc.).

We would like to have both a Geographer and a Geologist from each institution. Past members and other colleagues are welcome to be on the listserv if the committee business is of interest.

janderso@GPC.EDU John Anderson
daskren@CANES.GSW.EDU Daniel Askren
jm_byrd@MAIL.ARMSTRONG.EDU James Byrd

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Please let me know if you have additions or changes to these notes, and please send your comments on the Earth Systems course so we can send them along to the Regents, to forward to the State Board of Education.

Feel free to post comments to this listserv if you would like to discuss these or any other related issues affecting Geological Sciences and Geography.

To post to the list, send the email to Geography-Geology Committee [USGGEOLOGY@LISTSERV.UGA.EDU]

To send comments to me directly, my email is pgore@gpc.edu. I manage the listserv, so if you need to have a colleague added or if you want to be removed, please let me know. Harry Trendell is the other list manager. We can easily add the committee chair as a list manager if desired.

Thank you.

Dr. Pamela J. W. Gore
Professor of Geology
Georgia Perimeter College