Geology of America’s National Parks

Instructor
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http://www.depauw.edu/acad/geosciences/

Class
10:30-11:30 am MWF Julian 223
1:40-3:30 pm T (LAB) Julian 223

Office Hours
Stop in or by appointment.

Text
the Google Earth how-to notebook, Wilkerson & Wilkerson, DePauw.

Recommended Materials
USB drive, small personal stapler, pen, pencil, eraser, calculator

COURSE DESCRIPTION (FROM COURSE CATALOG):
Study of the geologic history of America via the National Park System. The course focuses on origin and evolution of landforms in various national parks and the geologic processes that created and sculpted them. Park features serve as a point of departure for interdisciplinary discussions on society's impact on the lithosphere, hydrosphere, atmosphere and biosphere.

COURSE GOALS:
To recognize geologic features preserved within the National Park System and use these features as a means to gain an understanding of, and an appreciation for, the dynamic forces that constantly shape and change our evolving planet. By the end of the course, you should be able to identify the major geologic features preserved in each park studied and to describe their origin/evolution.
COURSE ORGANIZATION

This syllabus is meant to provide an outline for the general flow of the course. At my discretion, I will add or omit topics and/or modify the timetable. Think of the syllabus as a guideline to the order that we will investigate the topics, not as a specific timetable. We will proceed at your pace and extend our discussion where current events and your interests dictate.

Classes will mainly consist of computer-based lectures with labs/projects, homework assignments, and quizzes associated with the material that we are studying in class. These latter activities will allow you to work with rock specimens, maps of the parks, and/or Google Earth. Course exams will include all material presented in lecture/lab and covered in your readings. The book and I may choose to focus on different aspects of a given national park, so it is important that you stay current on both the lecture/lab material and the chapter readings. Please ask questions about any material that you need clarified. Please note that there will be no review sheets for exams.

Cell phones should not be used during class (i.e., no text messaging; you may certainly answer emergency calls). Laptops should be used for classroom purposes only (not to surf the Internet, chat with friends, or check email). You also may use the Geosciences Mac computer lab.

GRADES

Final grades will be based on 3 exams, a Google project/poster, and quizzes/labs/homework assignments (see below). All materials to be turned in for a grade must be clearly written/typed and stapled. Late/messy/unstapled assignments will not be accepted and will receive a "0". Extensions will not be given unless there is a documented emergency or unless we have arranged an extension in advance because of exceptional circumstances.

Note that grades are based on a weighted average, not a straight average based on points. I calculate your grades automatically and can provide you up-to-date information on your grades at any time. It is important not to wait until the last month of class to become concerned about your grade.

<table>
<thead>
<tr>
<th>Percent of Final Grade</th>
<th>Grading Scale*</th>
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<tbody>
<tr>
<td>Exam #1 20.0%</td>
<td>A &gt;90%</td>
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<tr>
<td>Exam #2 20.0%</td>
<td>B 80-89%</td>
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<tr>
<td>Exam #3 20.0%</td>
<td>C 70-79%</td>
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<tr>
<td>National Park Google Earth Project 20.0%</td>
<td>D 60-69%</td>
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<tr>
<td>National Park Google Earth Project Poster 5.0%</td>
<td>F &lt;60%</td>
</tr>
</tbody>
</table>
| Quizzes/Labs/Homeworks 15.0%            | I reserve the right to adjust the grading scale up slightly (benefitting you!), if warranted by the class grade distribution.

* I reserve the right to adjust the grading scale up slightly (benefitting you!), if warranted by the class grade distribution.
ACADEMIC INTEGRITY

Any attempt to gain an unfair advantage over other students in the class will be handled in accordance with established University procedures as described in the Academic Handbook:

Academic Handbook section on Academic Dishonesty:
http://www.depauw.edu/univ/handbooks/dpubhandbooks.asp?ID=101&parentid=100

Note: From the section on Types of Academic Dishonesty, “Students are responsible for knowing the academic integrity policy and may not use ignorance of the policy as an excuse for dishonesty.”

Writing Center Information Regarding Plagiarism:
http://www.depauw.edu/admin/arc/W-center/plag.asp

ATTENDANCE

Attendance (and participation) is required and will be monitored. Should you know that you will be absent (e.g., health issue regarding yourself or immediate family, athletic obligation, etc), please see me in advance (see the Student Handbook for the University policy on attendance). If you are ill, please do not come to class (wait until you are without a fever for 24 hrs without medication). Contact me via email before class, and we'll make arrangements to make up assignments.

You are expected to be in class the day before and the day after vacation.

SELECTED LIST OF OTHER USEFUL BOOKS:

- Navajo Country by D.L. Baars, (Univ of New Mexico, 1995).
- Geology and America's National Park Areas by B. B. Ellwood (Prentice Hall, 1996).
- America's Wonderlands by National Geographic Society (NGS, 1959).
- Our National Parks by Reader's Digest (Reader's Digest, 1989).
- The Rocky Mountain National Park by E.A. Mills (Houghton Mifflin Co, 1932)
- The Incomparable Valley by F.E. Matthes, (Univ Cal Press, 1950)
- Sequoia National Park by F.E. Matthes, (Univ Cal Press, 1950).
- Any introductory geology textbook

Selected Web Pages

- http://www.nps.gov/ National Park Service
- http://www.coolworks.com/showme/natprk.htm Internet web page for jobs in NP

Feedback:
I usually need at least a week to return work (perhaps longer for large assignments). I try to write detailed comments on the papers that I return to you. I will “go over” graded materials with you as needed. Please ask questions in class or stop by my office if a concept is not clear or if you have a question on how I graded your work.

Additionally, you need to give me feedback about how the course is going. This course is difficult to teach in the respect that I can’t introduce geological concepts in a systematic manner because nature hasn’t arranged itself that way (even the most geologically simple parks have a wide range of interesting geologic topics to discuss). It is important that you “rein me in” if I go too fast or if I haven’t explained something well enough. Ask questions!!!
KEYS TO SUCCESS IN THIS COURSE:

1. **Read the Assigned Chapter** in a distraction-free environment and in advance of lecture over that material. As you’re reading, carefully note any questions that you have.

2. **Ask Questions.** The only stupid question is one that is unasked. Because you will be responsible for material in each assigned chapter whether that material is specifically covered during lecture or not, it is essential to ask questions to clarify any concepts that you do not understand. **PLEASE do not be too shy, embarrassed, intimidated, afraid, etc. to ask questions.**

3. **Take Good Notes.** Students with complete notes seem to do better in class. Try to write down the key material from the lecture and include as many sketches as possible. Rewriting your notes will make them more legible and orderly, plus it will help you focus on areas that are still unclear. Be careful of falling into “TV-watching mode”, as it is easy to look at the pictures and not take down any notes.

4. **Know the Key Terms** at the end of each chapter (these are italicized in the chapter text). I will expect everyone to ultimately know and understand these terms. If I use a term that you don’t understand, **PLEASE ASK me to define it.**

5. **Use the Glossary** in the back of the book to help understand key terms.

6. **Check out the Internet.** There is a world of information on the geology of the national parks out on the Web. You might use a search engine to find web sites of interest.

7. **Use the library.** There are many books & articles in the library that pertain to specific national parks…use them. Also, we have a great interlibrary loan system for materials that our library does not carry. Also, you will find introductory geology textbooks in the library, which will provide helpful information about geologic features and processes.

8. **Create your own Study Aids.** Some people like to highlight text in the chapter, others like to make flash cards, and still others like to study in groups and discuss the material. Feel free to experiment with what works for you. In addition, the Academic Resource Center in Asbury Hall (1st floor) has tutors and trained people available to help you refine and improve your study habits and techniques. Because different people have different learning styles and because I am not trained in that field, I struggle to help people with questions like “I studied really hard for this test, but I still got a bad grade. What should I do?” (in fact, the intent of this sheet is to help this problem). I’m much more adept at answering geology specific questions like “I’ve read the book and I don’t understand monoclines. Can you explain them?”.

9. **Study the Material on a Regular Basis.** It is important that everyone maintain good study habits by regularly working with the assigned material. Procrastination and cramming just don’t work for most of us…it is best to get comfortable with the material as we go along so that you don’t fall behind.

10. **Study for the Exam** as an Individual and then as a Group. Again, different people study in different ways. I’ve found that it helps to study as an individual first (thinking about what important concepts were emphasized in each chapter & lecture), then get together with others and study as a group (e.g., asking each other questions, brainstorming about what will be on the test, etc.).
## ORDER OF TOPICS

<table>
<thead>
<tr>
<th>Week Starting</th>
<th>Topics (Last Day to Withdraw 3/18)</th>
<th>Reading Assignment</th>
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<tbody>
<tr>
<td>1: 1/31</td>
<td>Syllabus Nature of Scientific Inquiry/Plate Tectonics Plate Tectonics Lab: Rocks I</td>
<td>Preface Pages xiv, 1-6</td>
</tr>
<tr>
<td>2: 2/7</td>
<td>Rocks/Rock Cycle Geologic Time Introduction to the National Park System Lab: Rocks II</td>
<td>Inside front cover Pages xiv, 1-6</td>
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<tr>
<td>3: 2/14</td>
<td>Grand Canyon NP Lab: Geologic Time Scroll</td>
<td>Chap 1</td>
</tr>
<tr>
<td>4: 2/21</td>
<td>Grand Staircase NM Zion NP &amp; Bryce Canyon NP Lab: Creating, editing, &amp; formatting placemarks</td>
<td>Chap 2 &amp; 3</td>
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<tr>
<td>5: 2/28</td>
<td>Capital Reef NP Lab: Placemark images, URLs, &amp; videos</td>
<td>Chap 4</td>
</tr>
<tr>
<td>6: 3/7</td>
<td>Exam #1-3/7 (est) Canyonlands NP &amp; Dead Horse Point SP Lab: Paths, Polygons, Tours, &amp; Animations</td>
<td>Chap 5</td>
</tr>
<tr>
<td>7: 3/14</td>
<td>Arches NP Lab: Image &amp; Photo Overlays</td>
<td>Chap 6</td>
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<tr>
<td>8: 3/21</td>
<td>Spring Break</td>
<td>NP Google Earth Project TOPIC DUE</td>
</tr>
<tr>
<td>9: 3/28</td>
<td>Petrified Forest/Painted Desert NP &amp; Badlands NP Lab: National Park Google Earth Project</td>
<td>Chap 8 &amp; 9</td>
</tr>
<tr>
<td>10: 4/4</td>
<td>Mammoth Cave NP Carlsbad Caverns NP Lab: National Park Google Earth Project</td>
<td>Pages 187-190 Chap 14 &amp; 16</td>
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<td>12: 4/18</td>
<td>Glacier Bay NP Wrangell-St Elias NP Denali NP Lab: National Park Google Earth Project</td>
<td>Chap 31, 32, &amp; 34</td>
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<tr>
<td>13: 4/25</td>
<td>Yosemite NP Lab: National Park Google Earth Project</td>
<td>Chap 28</td>
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<tr>
<td>14: 5/2</td>
<td>Mt. St. Helens NM Mt. Rainier NP Crater Lake NP Lab: National Park Google Earth Project PRESENTATIONS</td>
<td>Pages 505-510 Chap 35 &amp; 36</td>
</tr>
<tr>
<td>15: 5/9</td>
<td>Hawaii Volcanoes NP Yellowstone NP Lab: National Park Google Earth Project PRESENTATIONS</td>
<td>Chap 40 &amp; 43</td>
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Exam #3: Tues, May 17, 8:30-11:30am, Julian 223

Note: These topics and times are subject to change.

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**FAQ:**

Are lecture notes from the slides provided? No. Experience has shown that students do better in class when they are engaged in the note-taking process, so I want you to take your own notes during lecture.

Should we copy all the text on the slides? No. It is far better to listen to me and take notes than to copy the slides... Sometimes text on slides is really just to trigger me on a topic and not something to be committed to your notes. In addition, I commonly go more in-depth than what is on the slides, and I expect you to know that detail for the exams.