GEOLOGY 220: THE DYNAMIC EARTH
FALL 2015
Professor: JOHN L. SEXTON

SYLLABUS

LECTURE TIMES: M W F 10:00 TO 10:50 ROOM 202 Parkinson Lab
OFFICE HOURS: M W F 11:00 AM TO 1:00 PM TELEPHONE: 618-453-7374
EMAIL: sexton@geo.siu.edu

TEXTBOOK: EARTH: PORTRAIT OF A PLANET BY: STEPHEN MARSHAK (5th edition)

SCOPE:
The class is the introductory earth science class for geology and mining engineering majors (mandatory concurrent registration for geology majors in the laboratory course GEO 223). The class will substitute for GEOL 110 for those who wish to explore geology in greater detail. Credits from GEO 220 count towards ENVIRONMENTAL STUDIES minor.

OBJECTIVES:
Upon successful completion of this class students should have a basic understanding of topics selected from:
The central role of plate tectonics theory for understanding the earth
The geologic time scale
Minerals as the building blocks of rocks
The three types of rocks: igneous, sedimentary, and metamorphic, and the processes by which they form and associated structures.
Earthquake and volcano causes, locations, measurements, structures, and hazards.
A discussion of the nearby New Madrid earthquake zone
Earth’s surface processes: streams, ground water, erosion, landslides and mass wasting,
The use of geophysics to determine the chemical and physical composition of the interior of the earth

GRADING:
There will be 5 exams, each counting as 100 points. The final exam will be the 5th exam and will cover only the last part of the course from the fourth exam onward.

Exam grading will ideally be as follows for the exams:
90% and above will be an A
80% to 90% will be a B
70% to 80% will be a C
60% to 70% will be a D
Below 60% will be an F

Each exam will be worth 100 points for a total of 500 exam points. Exam based grades account for 100% of the final academic grade, unless students do the optional field trip. The optional field trip and related written paper may be used for up to 50 extra credit points each. Class attendance, participation, and behavior are considered in the final grade. Cheating will not be tolerated.

OPTIONAL FIELD TRIP:
An optional self-directed geological field trip and written report that will count up to 50 points each may be done for extra credit. These points will be averaged with the total of all exam scores. Information on the field trip will be discussed in a lecture, planned for October 19th. The field trip is not required, but is a great learning experience and may be helpful to those who may have a low score on exams. A 15 page paper must be written on the geology of the suggested field trip. Students must take photos at each stop and the student must be in photos at each stop (so you will need a classmate or friend along on the trip). Photos do not count as part of the 15 pages of written material. Reference all work. Do not plagiarize! The report is to be in your own words and properly referenced. Plagiarism is a serious academic offense and will be dealt with as such.
For those who are unable to participate for medical reasons, a term paper (on an approved topic) may substitute for the optional field trip. In such cases a note from the student’s physician is required. The student should select an entire day for the trip and the date should follow the lectures on faulting and deformation. Field trip participation forms (to be provided) must be completed and signed before the student goes on the field trip.

ATTENDANCE: Attendance is mandatory for all exams. If a student must miss an exam she/he is required to discuss it beforehand with the instructor. For any unplanned absence due to an illness, a letter from authorized health services personnel is required. Make up exams will only be given if these conditions are met.

COMPUTERS: Students may use computers in Parkinson 106 for class related activities.
LECTURES: The following lecture plan (syllabus) will be followed as closely as possible but it may not be possible to adhere strictly to this schedule. Generally some changes are required. TURN OFF COMPUTERS AND CELL PHONES AND OTHER DEVICES DURING LECTURES!
CLASS MEETINGS

DAY MONTH DATE

WEEK 1
M  A  24  INTRODUCTION (READ CHAPTER 1 AND 2)  1 and 2
W  A  26  DRIFTING CONTINENTS  3
F  A  28  PLATE TECTONICS  4

WEEK 2
M  S  31  PLATE TECTONICS  4
W  S  2  EARTH MATERIALS (MINERALS AND ROCKS)  5
F  S  4  EARTH MATERIALS (MINERALS AND ROCKS)  5

WEEK 3
M  S  7  LABOR DAY NO CLASS
W  S  9  EARTH MATERIALS (MINERALS AND ROCKS)  5
F  S  11  EXAM # 1: CHAPTERS 1, 2, 3, 4, 5

WEEK 4
M  S  14  IGNEOUS ROCKS  6
W  S  16  IGNEOUS ROCKS  6
F  S  18  WEATHERING AND SEDIMENTARY ROCKS  7

WEEK 5
M  S  21  SEDIMENTARY ROCKS  7
W  S  23  SEDIMENTARY ROCKS  7
F  S  25  EXAM#2: CHAPTERS 6 AND 7

WEEK 6
M  S  28  METAMORPHIC ROCKS  8
W  S  30  METAMORPHIC ROCKS  8
F  O  2  ROCK DEFORMATION  11

WEEK 7
M  O  5  FOLDS AND FAULTS  11
W  O  7  CRUSTAL DEFORMATION  11
F  O  9  **Lecture on Garden of the Gods optional field trip**

*****FALL BREAK SATURDAY, OCTOBER 10, (NOON) THROUGH TUESDAY, OCTOBER 13*****

WEEK 8
M  O  12  NO CLASS (FALL BREAK)
W  O  14  GEOLOGIC TIME  12
F  O  16  GEOLOGIC TIME  12
### WEEK 9
<table>
<thead>
<tr>
<th>M</th>
<th>O</th>
<th>19</th>
<th>EXAM# 3: CHAPTERS 8, 11, 12</th>
</tr>
</thead>
<tbody>
<tr>
<td>W</td>
<td>O</td>
<td>21</td>
<td>VOLCANOES</td>
</tr>
<tr>
<td>F</td>
<td>O</td>
<td>23</td>
<td>VOLCANOES</td>
</tr>
</tbody>
</table>

### WEEK 10
<table>
<thead>
<tr>
<th>M</th>
<th>N</th>
<th>26</th>
<th>EARTHQUAKES/ SEISMOLOGY</th>
</tr>
</thead>
<tbody>
<tr>
<td>W</td>
<td>N</td>
<td>28</td>
<td>EARTHQUAKES/ SEISMOLOGY</td>
</tr>
<tr>
<td>F</td>
<td>N</td>
<td>30</td>
<td>EARTHQUAKE EFFECTS AND PREDICTION</td>
</tr>
</tbody>
</table>

**Sunday November 1st: Turn clocks back--- end daylight savings time**

### WEEK 11
<table>
<thead>
<tr>
<th>M</th>
<th>N</th>
<th>2</th>
<th>NEW MADRID EARTHQUAKES</th>
</tr>
</thead>
<tbody>
<tr>
<td>W</td>
<td>N</td>
<td>4</td>
<td>NEW MADRID EARTHQUAKES</td>
</tr>
<tr>
<td>F</td>
<td>N</td>
<td>6</td>
<td><em><strong>EXAM#4: CHAPTERS 9, 10, AND NEW MADRID EARTHQUAKES</strong></em></td>
</tr>
</tbody>
</table>

### WEEK 12
<table>
<thead>
<tr>
<th>M</th>
<th>N</th>
<th>9</th>
<th>EARTHS INTERIOR AND GEOPHYSICS</th>
</tr>
</thead>
<tbody>
<tr>
<td>W</td>
<td>N</td>
<td>11</td>
<td>VETERANS DAY HOLIDAY</td>
</tr>
<tr>
<td>F</td>
<td>N</td>
<td>13</td>
<td>EARTHS INTERIOR AND GEOPHYSICS</td>
</tr>
</tbody>
</table>

### WEEK 13
<table>
<thead>
<tr>
<th>M</th>
<th>N</th>
<th>16</th>
<th>HYDROLOGIC CYCLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>W</td>
<td>N</td>
<td>18</td>
<td>WEATHERING, EROSION, &amp;MASS WASTING</td>
</tr>
<tr>
<td>F</td>
<td>N</td>
<td>20</td>
<td>WEATHERING, EROSION, &amp; MASS WASTING</td>
</tr>
</tbody>
</table>

### WEEK 14
<table>
<thead>
<tr>
<th>M</th>
<th>N</th>
<th>23</th>
<th>STREAMS AND RIVERS</th>
</tr>
</thead>
<tbody>
<tr>
<td>W</td>
<td>N</td>
<td>25</td>
<td><em><strong>THANKSGIVING BREAK NOVEMBER 25, 26, 27, 28, 29</strong></em></td>
</tr>
<tr>
<td>F</td>
<td>N</td>
<td>27</td>
<td>THANKSGIVING BREAK</td>
</tr>
</tbody>
</table>

### WEEK 15
<table>
<thead>
<tr>
<th>M</th>
<th>N</th>
<th>30</th>
<th>STREAMS AND RIVERS</th>
</tr>
</thead>
<tbody>
<tr>
<td>W</td>
<td>D</td>
<td>2</td>
<td>STREAMS AND RIVERS</td>
</tr>
<tr>
<td>F</td>
<td>D</td>
<td>4</td>
<td></td>
</tr>
</tbody>
</table>

### WEEK 16
<table>
<thead>
<tr>
<th>M</th>
<th>D</th>
<th>7</th>
<th>GEOLOGY OF DESERTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>W</td>
<td>D</td>
<td>9</td>
<td>GEOLOGY OF DESERTS</td>
</tr>
<tr>
<td>F</td>
<td>D</td>
<td>11</td>
<td>GEOLOGY OF DESERTS</td>
</tr>
</tbody>
</table>

***FINAL EXAM WEEK: MONDAY DECEMBER 14 THROUGH FRIDAY DECEMBER 18***

***FINAL ON DECEMBER 16th, 10am till 11:45am, IN REGULAR CLASSROOM PARKINSON 202***

***THE FINAL (EXAM#5) WILL COVER MATERIAL LECTURED ON SINCE THE LAST EXAM***

Emergency Procedures:

Southern Illinois University Carbondale is committed to providing a safe and healthy environment for study and work. Because some health and safety circumstances are beyond our control, we ask that you become familiar with the SIUC Emergency Response Plan and Building Emergency Response Team (BERT) program. Emergency response information is available on posters in buildings on campus, available on BERT’s website at www.bert.siu.edu, Department of Safety’s website www.dps.siu.edu (disaster drop down) and in Emergency Response Guideline pamphlet. Know how to respond to each type of emergency.