460:410—Field Geology
COURSE INFORMATION

Field work in 2007 will take place August 17-30

I. Basic Description: Capstone investigation of the geology of the Fundy rift basin, maritime Canada, integrating sedimentology, stratigraphy, and structural geology. Students gain skills in geologic mapping on air-photo and topographic base maps; construction of geological maps and cross sections; interpretations of seismic-reflection profiles; preparation of oral presentation and written report.

II. Goals and Rationale: (1) Acquire basic field skills (e.g., outcrop analysis, use of Brunton compass, geologic mapping) in an educational setting that stresses active learning. (2) Develop research and communication skills (e.g., data integration, analysis, and interpretation; critical thinking; oral and written communication; teamwork and cooperation). (3) Demonstrate how professional geologists in industry and academia conduct scientific investigations: (a) obtain background information by reading the scientific literature; (b) collect and interpret field data; (c) integrate field data with available seismic data and the results of experimental models; (d) give oral presentations on various thematic topics related to the research project; and (e) prepare comprehensive written reports styled after technical publications.
III. Prerequisites: Structural Geology AND Stratigraphy or Sedimentary Geology; OR permission of instructors

IV. Instructors: Martha Oliver Withjack & Roy W. Schlische

V. Basis for Grade
- **Field projects**: ~30% [Includes geologic maps, cross sections, interpreted seismic-reflection profiles, exercises, quizzes, and other homework. Corrected graphics are used in oral presentation and the final report.]
- **Class participation**: ~10% [includes attendance, class discussions, Q&A]
- **Oral presentation**: ~15% [Students have the option re-doing the presentations. *The final grade for the oral presentation is the highest earned grade.*]
- **Final report—text**: ~30% [Students have the option re-writing the final report. *The final grade for the report is the average of the grades for the two versions.*]
- **Final report—graphics**: ~15% [Includes corrected versions of all geologic maps, cross sections, interpreted seismic profiles and other graphics produced during field projects.]

Letter grades: A, 90-100; B+, 85-89.5; B, 80-84.5; C+, 75-77.5; C, 70-74.5; D, 60-69.5; F, <60.

VI. Collaboration: For virtually all projects, you will work in groups of two or three. Each person is expected to contribute equally to gathering and interpreting field data. Each person must turn in her/his own unique version of the map, cross section, etc. The written report must also be an individual effort. *In short, collaboration in the field is encouraged, but thereafter all work must be an individual effort, unless otherwise specified.*

VII. Plagiarism: Plagiarism is a serious academic offense. Plagiarism includes: (1) passing off the work of others as your own; and (2) failure to acknowledge properly the source of ideas, information, facts, figures, drawings, etc., that are not your own. You can avoid plagiarism in the written report by properly referencing the work of others. Refer to the Withjack et al. (1998) paper [Day 4] for the correct way to cite / reference the work of others and to prepare and format the bibliography (references cited). *A grade of zero (0) will be assigned to assignments containing plagiarism.*

**Sample Course Schedule (Fall 2007)**

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<tr>
<th>Day</th>
<th>Date</th>
<th>Activity</th>
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<tbody>
<tr>
<td>1</td>
<td>17 Aug</td>
<td>Introductory lectures &amp; exercises at Rutgers (9:30 am – 4:00 pm)</td>
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<tr>
<td>2</td>
<td>18 Aug</td>
<td>Introductory lectures &amp; exercises at Rutgers (9:30 am – 4:00 pm)</td>
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<td>3</td>
<td>19 Aug</td>
<td>Arrive at Rutgers at 8:30 am; driving day (duration: ~11 hrs.); overnight in Brewer, Maine</td>
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<tr>
<td>4</td>
<td>20 Aug</td>
<td>Travel day (duration: ~7 hrs.); arrive in Parrsboro; shopping, tour of town; read Day 4 notes in preparation for Quiz</td>
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| 5   | 21 Aug | Museum: Quiz; lectures and exercises on Fundy basin geology; stratigraphy & depositional environments (8:00 am – 11:00 pm)  
*Field work:* Carrs Brook I stratigraphy (& review); Brunton compass (11:00 – 17:00) |
| 6   | 22 Aug | Museum: Review; preliminary review of contacts; work on TMT (8:00 – 10:30 pm)  
*Field work:* Carrs Brook II (contacts) (10:30 – 17:00) |
| 7   | 23 Aug | Museum: Preliminary geologic map; TMT1 (8:00-12:00)  
*Field work:* Carrs Brook III (geologic mapping) (12:00 – 17:00 pm) |
| 8   | 24 Aug | Museum: CB map & cross sections; TMT2; forced fold; photomosaic (8:00 – 12:00)  
*Field work:* Five Islands East (12:00-18:00) |
| 9   | 25 Aug | Museum: Review; oblique deformation; fault zones, lava flows & dikes; fault breccias. talus-slope breccia vs. debris-flow conglomerate (8-11:45 am)  
*Field work:* Five Islands West (11:45 am – 6:15 pm) |
| 10  | 26 Aug | Free morning: 8:00-13:00  
*Field work:* Wasson Bluff I (transect) (13:00 – 18:00) |
| 11  | 27 Aug | Museum: Construct cross section Five Islands area; seismic line 81-47 (8:00–12:00)  
*Field work:* Wasson Bluff II (Clarke Head & geologic mapping) (12:00-18:00) |
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| 12   | 28 Aug | **Museum:** Work on WB geologic map & cross sections; 82-28 (8:00 – 14:00)  
**Field work:** Blue Sac |
| 13   | 29 Aug | **Field work:** Extra field work at Five Islands & Wasson Bluff (8:00-13:30)  
**Museum:** Review (14:00-15:00)  
Drive to Pennfield, New Brunswick (driving time: 4.5 hours) |
| 14   | 30 Aug | Travel day: depart at 7:00 am (driving time: ~13 hours) |
| 15   | 07 Sept | Blue Sac cross sections; overview of oral presentations |
| 16   | 14 Sept | In-class presentation (1st pass) |
| 17   | 21 Sept | In-class presentation (revised); composite TMT’s due |
| 28 Sept | Review of written report |
| 12 Oct | Written report (1st draft) due |

Photos courtesy of Mark D’Angelo
Field Geology
Geological and Geophysical Investigations in the Fundy Rift Basin, Nova Scotia, Canada
Martha Oliver Withjack & Roy W. Schlische

Location of field sites

Red Head

Air photo of Carrs Brook field site

Old Wife Point, Five Islands field site

Satellite view of Parrsboro-Five Islands region

Carrs Brook tidal flat

The Brothers viewed from Wasson Bluff

Line drawing of seismic-reflection profile from the Fundy basin