

# ENERGY EXPLORATION (GEO 330K)

## SPRING 2012

Lecture: MW 1:00 -2:00 pm JGB 2.218  
Labs: JGB 2.310 T 8-10am, TH 8-10am, F 8-10am, T 10-12pm, TH 12-2pm, M 2-4pm

**Instructor:** **Peter B. Flemings**, EPS 3.134  
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**Xavier Janson**, PRC building 130 BEG 3.112F  
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**Ron Steel**, DGS 6.114  
Office Phone: 471-0954 [rsteel@mail.utexas.edu]

### Teaching Assistants:

|                    | Email                     | Section 1      | Section 2      |
|--------------------|---------------------------|----------------|----------------|
| William Betts      | wbetts@mail.utexas.edu    | 27600, T 10-12 | 27610, M 2-4   |
| Laura Pommer       | laura.pommer@utexas.edu   | 27585, T 8-10  | 27605, TH 12-2 |
| Jennifer Glidewell | glidewell@mail.utexas.edu | 27590, TH 8-10 | 27595, F 8-10  |

### Office Hours:

Flemings: MW 12-1 (or by appointment)  
Janson: MW 12-1 (or by appointment)  
Steel: MW 12-1 (or by appointment)  
William Betts  
Laura Pommer  
Jennifer Glidewell

### Grading Policy

Homework/Quizzes 10%  
Labs 25%  
Mid-Term 20%  
Final Exam 20%  
Final Project 25%

**Class Attendance is required and there will be quizzes during class.**

**Labs are due no later than the start of the next lab. No late labs accepted (0 credit) except under pre-negotiated circumstances.**

Note: All acts of dishonesty in any work constitute academic misconduct. This includes, but is not limited to, cheating, plagiarism, fabrication of information, misrepresentations, and abetting of any of the above. The Academic Misconduct Disciplinary Policy will be followed in the event that academic misconduct occurs.

**I-CLICKER:** An i-clicker remote is required. You can purchase it through the bookstore.

### **References:**

- 1) Gluyas, J. and Swarbrick, R., 2004, Petroleum Geoscience, Blackwell Publishing Company, 359 p.  
Recommended class text
- Other background reading
- 2) Selley, Richard C., 1998, Elements of Petroleum Geology 2nd ed., Academic Press, 470 p.
- 3) A squith, G., 1982, Basic Well Log Analysis for Geologists, Methods in Exploration Series, AAPG, 216 p.
- 4) Yergin, D., The Prize, Simon and Schuster, 885 p.
- 5) Levorsen, A.I., 1967, Geology of Petroleum, W. H. Freeman and Company, 724 p.

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### Class Schedule

#### **Week 1**

|         |                           |   |
|---------|---------------------------|---|
| Lect. 1 | Wed, Jan 18               | Course Overview & Fundamentals of Seismic Interpretation (PF) |
| Lab 1   | Contouring exercises (RS) |   |

#### **Week 2**

|         |  |   |
|---------|--|---|
| Lect. 2 | Mon, Jan 23  | Seismic Interpretation (incl. shelf margins) (XJ) |
| Lect. 3 | Wed, Jan 25  | Clastic Reservoirs & their log patterns (RS)      |
| Lab 2   | Seismic & log calibration; reservoir recognition on logs and seismic (RS and XJ) |   |

#### **Week 3**

|         |                                   |   |
|---------|-----------------------------------|---|
| Lect. 4 | Mon, Jan 30                       | Structural Traps (XJ)                         |
| Lect. 5 | Wed, Feb 01                       | Clastic Reservoirs: across shelf margins (RS) |
| Lab 3   | Seismic Mapping: Faults (XJ & PF) |   |

#### **Week 4**

|         |                                     |  |
|---------|-------------------------------------|--|
| Lect. 6 | Mon, Feb 06                         | Seismic interpretation-structure and traps (XJ)        |
| Lect. 7 | Wed, Feb 08                         | Seismic interpretation-reservoir and bright spots (XJ) |
| Lab 4   | Seismic Mapping: horizons (XJ & PF) |  |

#### **Week 5**

|         |                          |                                 |
|---------|--------------------------|---------------------------------|
| Lect. 8 | Mon, Feb 13              | Mapping fluid distribution (PF) |
| Lect. 9 | Wed, Feb 15              | Volume calculation (PF)         |
| Lab 5   | Prospect Generation (PF) |                                 |

#### **Week 6**

|          |               |  |
|----------|---------------|--|
| Lect. 10 | Mon, Feb 20   | Source rocks, kerogen & HC generation (XJ) |
| Lect. 11 | Wed, Feb 22   | Maturation and migration (PF)              |
| Lab 6    | Trap Lab (XJ) |  |

#### **Week 7**

|          |   |                                     |
|----------|---|-------------------------------------|
| Lect. 12 | Mon, Feb 27                               | Sedimentary Basins (RS)             |
| Lect. 13 | Wed, Feb 29                               | Basins: Rift to passive margin (RS) |
| Lab 7    | Geo History Lab & Maturation Modeling(RS) |                                     |

#### **Week 8**

|          |                             |  |
|----------|-----------------------------|--|
| Lect. 14 | Mon, Mar 05                 | Exam Review (RS)                                     |
|          | Wed, Mar 07                 | 6-8pm Mid-Term Exam (evening grading by TAs & Profs) |
| Lab 8    | Exploration Project handout |  |

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### Week 9

**Spring Break – March 12 - 16**

### Week 10

|          |                     |   |
|----------|---------------------|---|
| Lect. 15 | Mon, Mar 19         | Description of Final Project (XJ)         |
| Lect. 16 | Wed, Mar 21         | Interpretation of Paleontologic Data (RS) |
| Lab 9    | Exploration Project |   |

### Week 11

|          |                        |                    |
|----------|------------------------|--------------------|
| Lect. 17 | Mon, Mar 26            | Galloway Lecture   |
| Lect. 18 | Wed, Mar 28            | Risk Analysis (PF) |
| Lab 10   | Risk Analysis Lab (PF) |                    |

### Week 12

|          |                          |                         |
|----------|--------------------------|-------------------------|
| Lect. 19 | Mon, Apr 02              | Risk Analysis (Chevron) |
| Lect. 20 | Wed, Apr 04              | OPEN                    |
| Lab 11   | Exploration Project work |                         |

### Week 13

|          |                          |                           |
|----------|--------------------------|---------------------------|
| Lect. 21 | Mon, Apr 09              | Regional Basemap Review   |
| Lect. 22 | Wed, Apr 11              | Guest Lecture (Shell Gas) |
| Lab 12   | Exploration Project work |                           |

### Week 14

|          |                     |   |
|----------|---------------------|---|
| Lect. 23 | Mon, Apr 16         | Exploration Project assistance                            |
| Lect. 24 | Wed, Apr 18         | Introduction to project presentation (tips for good talk) |
| Lab 13   | Exploration Project |   |

### Week 15 (AAPG week)

|          |             |                    |
|----------|-------------|--------------------|
| Lect. 25 | Mon, Apr 23 | Project assistance |
|          | Wed Apr 25  | Project assistance |

### Week 16

|          |                |                             |
|----------|----------------|-----------------------------|
| Lect. 26 | Mon, Apr 30    | Project Assistance          |
|          | Tuesday May 01 | Poster presentation all day |
| Lect. 27 | Wed, May 02    | Chevron Presentation        |
|          | Friday, May 11 | 9.00-12.00: Final Exam      |