GY 305: Geophysics (3 credit hours; Web-Enhanced)
Fall Semester 2012
Your Hosts: Dr. Doug Haywick (Weeks 1-8) and Dr David Allison (Weeks 9-16)

Bulletin Description: Application of classical physics to the study of the Earth and the solution of problems in Earth sciences including analysis of geomagnetics, the Earth’s Gravitational field. Seismic analysis, sequence stratigraphy, well log interpretation, and applications to petroleum exploration. Prerequisites: GY 111 and either PH 114 or PH 201 or permission of the instructors

Objectives and Goals: GY 305 is intended to introduce the student to the wide variety of geophysical techniques that are used to interpret geological strata, structures, and characteristics. The course includes: optical survey techniques in the field, use of seismic wave reflection and interpretation of seismic data, gravity use of geophysical well logs in petroleum and groundwater exploration, geophysical petroleum exploration, sequence stratigraphy, and subsurface contamination / minerals detection. The goals of Dr. Haywick’s portion of GY 305 include: 1) providing students with an understanding of the practical applications of geophysics to the petroleum industry; 2) providing students with hands-on experiences in solving petroleum-related geophysical problems; 3) introducing students to sequence stratigraphy.

TENTATIVE LECTURE GAME PLAN (subject to revision)

Week 1 INTRODUCTION
- Lect 1: Introductions, Elementary Physics (wave theory) (1)
- Lect 2: Reflection and refraction (2)
  Lab 1: Basic Physics (as applied to geology)

Week 2 BASIC WELL LOGS - PART 1
- Lect 1: SP and Resistivity Logs (3)
- Lect 2: Gamma Ray Logs (4)
  Lab 2: Well log correlation exercise 1

Week 3 INTRODUCTION TO PETROLEUM GEOPHYSICS
- Lect 1: Labor Day Holiday
- Lect 2: Generation of petroleum; Migration of petroleum (5)
  Lab: None this week; Labor Day holiday

Week 4 ELECTRIC LOG INTERPRETATION
- Lect 1: Petroleum Reservoirs (6)
- Lect 2: Neutron Activation logs; Density and other logs (7)
  Lab 3: Well log correlation exercise 2

Week 5 ELECTRIC LOG INTERPRETATION
- Lect 1: Isopach maps (8) First examination (Take Home)
- Lect 2: Fence post diagrams and other graphic techniques (9)
  Lab 4: Mapping exercises

Week 6 SEISMIC STRATIGRAPHY
- Lect 1: Introduction to seismic methods (10)
- Lect 2: Seismic stratigraphy (11)
  Lab 5: Seismic correlations

Week 7 SEISMIC STRATIGRAPHY
- Lect 1: Sequence stratigraphy part 1: surfaces and systems tracts (12)
- Lect 2: Sequence stratigraphy part 2: What the f**k? (13)
  Lab 6: Sequence stratigraphy interpretations

Week 8 THE END OF HAYWICK
- Lect 1:Nothing, Fall Break
- Lect 2: Haywick Section Final Exam (in class)
  Lab: None this week; Fall Break holiday

Reasonably useful information:

Assessment: 50% of your grade in GY-305 comes from Dr. Haywick’s portion of the course. 50% is determined by Dr. Allison.

Dr. Haywick’s portion:
- Attendance* …………………………………………………………… 10%
- Lab assignments ………………………………………………………… 50%
- Mid-term exam …………………………………………………………… 20%
- Final exam ………………………………………………………………… 20%  

Grading: A - 90+  B - 80 to 89  C - 70 to 79  D - 60 to 69  F - 59 and below

Laboratories: It is up to you to complete the labs that are assigned in this course. You may do this during the lab periods and/or outside of normal university hours. (You will be provided with the combination to the lab room at the start of the course). All Labs are due

*Attendance: It seems that a good number of people who take courses feel they do not have to attend the lectures. Nothing could be further from the truth. Much of the material we will discuss will not be covered in any other sources and if you miss the lectures you will miss this material. Attendance is mandatory and assessable for my portion of GY 305 (it’s worth 10% of your mark). I will dock you if you have 2 or more unexcused absences (approximately 15% of the lectures). If you have 4 or more unexcused absences (approximately 30% of the lectures) you will receive 0% for attendance. If you miss more than 6 lectures/labs, I will drop your final grade an additional 10%. If you also fail to complete less than ½ of the assignments and exams that I assign you in GY 305, I will be forced to assign you an F* grade. Note: I will base your attendance on the class roll I record at the start of the class. If you missed the roll because you were late, it is up to you to notify me before the end of the class. Excessive tardiness will be considered equivalent to missing classes. By the way, if your name is not on that roll, you will be marked absent. **There will be no** exceptions to this attendance/F* policy.

Students with Disabilities: In accordance with the Americans with Disabilities Act, students with bona fide disabilities will be afforded reasonable accommodations. The Office of Special Student Services (OSSS) will certify a disability and advise faculty members of reasonable accommodations. If you have a specific disability that qualifies you for academic accommodations, please notify the instructor/professor and provide certification from the Office of Special Student Services. OSSS is located at 5828 Old Shell Road at Jaguar Drive, (251-460-7212).

Changes in Course Requirements: Not all classes progress at the same rate thus course requirements might have to be modified as circumstances dictate. You will be given written notice if the course requirements need to be changed.

Academic Disruption Policy: The University of South Alabama’s policy regarding Academic Disruption is found in The Lowdown, the student handbook. http://www.southalabama.edu/lowdown/academicdisruption.shtml: Disruptive academic behavior is defined as individual or group conduct that interrupts or interferes with any educational activity or environment, infringes upon the rights and privileges of others, results in or threatens the destruction of property and/or is otherwise prejudicial to the maintenance of order in an academic environment. I expect all students to be cordial, courteous and respectful of faculty members and fellow students. I will behave the same way towards you.

Student Academic Conduct: The University of South Alabama’s policy regarding Student Academic Conduct Policy is found in The Lowdown http://www.southalabama.edu/lowdown/academicconductpolicy.shtml: The University of South Alabama is a community of scholars in which the ideals of freedom of inquiry, freedom of thought, freedom of expression, and freedom of the individual are sustained. The University is committed to supporting the exercise of any right guaranteed to individuals by the Constitution and the Code of Alabama and to educating students relative to their responsibilities. If you violate these standards in my class, you will be asked to leave my class… permanently.

Online Writing Support: The University of South Alabama provides online writing tutoring services through SMARTTHINKING, an online tutoring service. SMARTTHINKING is available at http://services.smarthinking.com. Students may enter the site by logging on with their Jag number and using the last four digits of the social security number as the password. For log-on problems, technical questions and/or on-campus writing assistance, contact the USA Writing Center at 251-460-6480 or e-mail csaint-paul@usouthal.edu.
D. Haywick Contact Information, Office Hours and Schedule

How & where to find Doug: I reside in LSCB room 049. I believe in open office hours, so feel free to pay me a visit anytime between 9:00 am & 5:00 pm (except on Fridays). However, I will generally be in my office during the times posted on my schedule. Should you be unsuccessful in your attempts to find me, fear not! You have two options: 1) check the Where's Doug note on my door for my location during normal office hours, or 2) leave a message for me:

Telephone: 460-7569 (Haywick’s office – you can leave a message).
E-mail: dhaywick@southalabama.edu
internet: http://www.southalabama.edu/geology/haywick

D. Haywick Hours (Fall 2012 Semester)

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<th>Time</th>
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Note: shaded areas are research/committee/personal times: STAY AWAY!
* Dr. Haywick teaches GY 305 during the first 8 weeks of the fall semester.

Laptops, cellphones, PDAs, Wii/PS3/Xboxes can NOT be used once the GY 111 lecture starts. The first time I see you playing with anything electronic, I will politely ask you to turn it off. The next time, I will be less polite. Don’t try it 3 times.