

## GEO391: GEOLOGY OF THE MIDDLE EAST

Class Unique Number: 27785

Spring 2012, Class Meeting times: MWF 1-2P in EPS 1.126

*“What is the point of writing only about those that we see? Why don’t we write a little about those that we think?” - Abülhak Hâmit Tarhan, later 19<sup>th</sup> or early 20<sup>th</sup> century.*

*“Compared with countries that have made “giant”-sized (and above) oil discoveries, in the continental U.S.A./Alaska, for example, the number of fields discovered over the years holding initial recoverable reserves of >0.5 billion barrels of oil does not exceed 48...In the Middle East, the comparable number is 149...”*  
*Ziad R. Beydoun, Episodes, 21, 74-81.*

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JGB3.3.20B

**Office Hours:** Monday and Tuesday 10A-11A, or by appointment

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### I. Rationale:

The Middle East has been singled out as one of the most crucial regional arenas for U.S. foreign policy in the coming years. The region, defined in this course as encompassing western Asia and North Africa, has long been known for its prolific energy resources. The links between the geology of the region and politics, society, and economics are well-known, but not well-understood. This course’s primary focus is developing a student’s knowledge of its geology.

### II. Course Aims and Objectives:

#### *Aims*

This course aims to improve the students understanding of the basic geology and tectonics of the Middle East. The region has been a breeding ground for the development of models of continental extrusion, rifting and extension, and collisional dynamics, and more recent issues such as ecoterrorism and global warming. The student will improve their knowledge of the geology and geography of the area, including the dynamics of its fundamental tectonic structures that serve as type-examples for geological processes elsewhere and the source and impact of its vast energy resources. The student will improve their understanding of the contributions geosciences researchers have made in the area.

#### *Specific Learning Objectives:*

- Develop an understanding of the geology of the Middle East; identify its major structures and boundaries and mountain ranges and oil fields; learn about specific models developed to understand Middle Eastern geological features commonly exported to explain similar phenomena elsewhere.
- Students will learn to read geosciences papers that are (1) reviews of important features in the Middle East, (2) opinions about geological philosophy and terminology, and (3) the latest breaking news and hot topics for discussion about tectonic features in the region.
- Students will develop their writing skills by answering short answer questions about specific readings and writing a review paper about a topic of their choice for possible publication in Earth Sciences Reviews.

### III. Format and Procedures:

The course consists of **3 lecture hours** a week for one semester. During lecture, we will discuss specific topics related to the course. You are expected to attend each lecture, take notes, and actively participate. During lectures, I will be asking your opinions on the papers assigned to each topic, and you are encouraged to seek additional

information about the topics to be covered using library resources. After an introductory lecture, you will be required to answer short questions about the reading assignments.

#### IV. My Assumptions

There are no prerequisites for the course, but I assume you have an understanding of general geology, including the basics of plate tectonics.

#### V. Course Requirements:

##### 1. *Class attendance and participation policy:*

**Attend all scheduled classes and arrive on time.** Late arrivals and early departures are disruptive. While there is no point penalty specified for class absences, experience has shown a correlation between poor class attendance and low grades.

**Ground Rules for participation in discussions or activities.** I expect you will listen actively in the course and respect others when they are talking. You should challenge one another by asking questions, but refrain from personal attacks, instead focus on ideas. I expect you will participate to the fullest of your ability.

**Organization.** Keep all class work, readings, and notes in a jumbo 3-ring binder. Periodically, I may check to make sure that you are staying organized. Think of this class as a job: I expect you to show up on time, work hard, and make every effort to learn.

**The expectation for all students in this course is that complete integrity will be demonstrated at all times.** Violations of academic dishonesty will be reported for administrative action. Although I encourage you to discuss the readings and your research topic with each other and me, your answers should be written only by you.

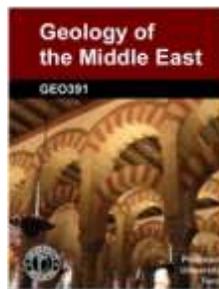
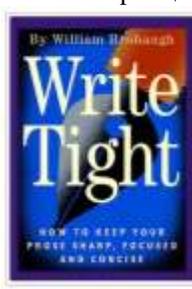
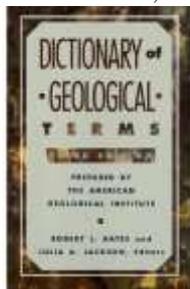
**Religious Holy Days.** By UT Austin policy, you must notify me of your pending absence at least fourteen days prior to the date of observance of a religious holy day. If you must miss a class, a work assignment, or a project in order to observe a religious holy day, I will give you an opportunity to complete the missed work within a reasonable time after the absence.

##### 2. *Course Readings/Materials*

**Course packet:** Purchase and download readings and exercises for the course from University Readers (<http://www.universityreaders.com/>). The course packet will be sent to you as a 3-hole punched in shrink wrap, and 20% of the reader should be available for immediate download. Purchase a binder to place the course packet in, and add some additional paper for notes during lecture. Bring readings from the course packet to lecture.

##### **Recommended Books:**

- Bates, Robert L., and Jackson, Julia A. (1984) Dictionary of Geological Terms: Third Edition, Rocks, Minerals and Gemstones. Anchor Publishers, ISBN-10: 0385181019, ISBN-13: 978-0385181013. (\$12.30 from Amazon.com)
- Brohaugh, William (2002) Write Tight: How to Keep Your Prose Sharp, Focused and Concise. Intercollegiate Studies Institute, ISBN-10: 1882926889, ISBN-13: 978-1882926886. (\$11.74 from Amazon.com, although used is as cheap as \$3.85).



##### 3. *Use of Blackboard in Class*

In this class I use Blackboard—a Web-based course management system with password-protected access at <http://courses.utexas.edu> —to distribute course materials, to communicate and collaborate online, to post grades, to submit project assignments. You can find support in using Blackboard at the ITS Help Desk at 475-9400, Monday through Friday, 8 a.m. to 6 p.m. I will post PowerPoint slides on Blackboard prior to each lecture and they will be available throughout the semester. You are welcome to bring your laptop to class and access these during lecture. Recent studies indicate that students who bring laptops to class perform worse (on average) than their non-laptop using peers, and are much less likely to pay

attention in class. Some students, however, have disabilities that require their use or find that it is their learning style. Laptops can be a distraction for other students. If you use your laptop in class, do not be a distraction to other students or to me.

**VI. Grading Procedures: Grades** will be based on:

- Lecture Exam 1 (25%) short answer
- Lecture Exam 2 (25%) short answer, based on material since lecture exam 1
- Lecture Final Exam (30%) short answer, cumulative
- Short Answer questions (20%) on the readings throughout the course, graded by Dr. Catlos

*I will use the straight grading scale (no +/- grades)*

**Policy concerning short written exercises.** These exercises should be completed and turned after lectures about each topic. I will inform you when they are due. If you know you will miss an exercise, you should inform the professor at least 1 week prior to missing the deadline. Unexcused (and lame excused) late exercises will be docked 75% of the total possible points if they are turned in within 1 week. Excused late exercises must be made up in a timely fashion (determined by the instructor), or else will also be docked 75%.

**Subject-to-change notice.** This syllabus represents the current plans and objectives of the course. As we go through the semester, those plans may need to change to enhance the class learning opportunity. Such changes, communicated clearly, are not unusual and should be expected.

**VII. Academic Integrity**

**University of Texas Honor Code**

*The core values of The University of Texas at Austin are learning, discovery, freedom, leadership, individual opportunity, and responsibility. Each member of the university is expected to uphold these values through integrity, honesty, trust, fairness, and respect toward peers and community.*

Each student in this course is expected to abide by the University of Texas Honor Code. Any work submitted by a student in this course for academic credit will be the student's own work. You are encouraged to study together and to discuss information and concepts covered in lecture with other students. You can give "consulting" help to or receive "consulting" help from such students. However, this permissible cooperation should never involve one student having possession of a copy of all or part of work done by someone else, in the form of an email, an email attachment file, a diskette, or a hard copy. Should copying occur, both the student who copied work from another student and the student who gave material to be copied will both automatically receive a zero for the assignment. Penalty for violation of this Code can be extended to include failure of the course and University disciplinary action.

**VIII. Other University Notices**

**Use of E-mail for Official Correspondence to Students**

All students should become familiar with the University's official e-mail student notification policy. It is the student's responsibility to keep the University informed as to changes in his or her e-mail address. Students are expected to check e-mail on a frequent and regular basis in order to stay current with University-related communications, recognizing that certain communications may be time-critical. It is recommended that e-mail be checked daily, but at a minimum, twice per week. The complete text of this policy and instructions for updating your e-mail address are available at <http://www.utexas.edu/its/policies/emailnotify.html>.

**Documented Disability Statement**

Any student with a documented disability who requires academic accommodations should contact Services for Students with Disabilities (SSD) at (512) 471-6259 (voice) or 1-866-329-3986 (video phone). Faculty members are not required to provide accommodations without an official accommodation letter from SSD.

- Please notify me as quickly as possible if the material being presented in class is not accessible (e.g., instructional videos need captioning, course packets are not readable for proper alternative text conversion, etc.).
- Contact Services for Students with Disabilities at 471-6259 (voice) or 1-866-329-3986 (video phone) or reference SSD's website for more disability-related information:  
[http://www.utexas.edu/diversity/ddce/ssd/for\\_cstudents.php](http://www.utexas.edu/diversity/ddce/ssd/for_cstudents.php)

**Behavior Concerns Advice Line (BCAL)**

If you are worried about someone who is acting differently, you may use the Behavior Concerns Advice Line to discuss by phone your concerns about another individual's behavior. This service is provided through a partnership

among the Office of the Dean of Students, the Counseling and Mental Health Center (CMHC), the Employee Assistance Program (EAP), and The University of Texas Police Department (UTPD). Call 512-232-5050 or visit <http://www.utexas.edu/safety/bcal>.

**Q drop Policy**

The State of Texas has enacted a law that limits the number of course drops for academic reasons to six (6). As stated in Senate Bill 1231: “Beginning with the fall 2007 academic term, an institution of higher education may not permit an undergraduate student a total of more than six dropped courses, including any course a transfer student has dropped at another institution of higher education, unless the student shows good cause for dropping more than that number.”

**Emergency Evacuation Policy**

Occupants of buildings on the UT Austin campus are required to evacuate and assemble outside when a fire alarm is activated or an announcement is made. Please be aware of the following policies regarding evacuation:

- Familiarize yourself with all exit doors of the classroom and the building. Remember that the nearest exit door may not be the one you used when you entered the building.
- If you require assistance to evacuate, inform me in writing during the first week of class.
- In the event of an evacuation, follow my instructions or those of class instructors.

Do not re-enter a building unless you’re given instructions by the Austin Fire Department, the UT Austin Police Department, or the Fire Prevention Services office.

**IX. Important dates.** *Includes when Dr. Catlos has planned meetings out of town.*

January 13: Classes begin.

January 16: Last day of the official add/drop period; after this date, changes in registration require the approval of the department chair and usually the student’s dean. Last day undergraduate students may register and pay tuition without the approval of the registrar. Last day graduate students may register and pay tuition without the approval of the graduate dean. Last day law students may register and pay tuition without the approval of the dean. 5:00 pm: Tuition payment deadline for all students. Tuition may be paid in full or in installments.

January 20: HOLIDAY

January 29: Twelfth class day; this is the date the official enrollment count is taken. Last day an undergraduate student may add a class except for rare and extenuating circumstances. Last day to drop a class for a possible refund. Last day a graduate student may, with the required approvals, add a class.

March 10-15: SPRING BREAK

**Tentative Course Schedule:** *\*\*This syllabus represents my current plans and objectives. As we go through the semester, those plans may need to change to enhance the class learning opportunity. Such changes, communicated clearly, are not unusual and should be expected.*

Date(s)	Main Topic(s)	Readings – to be completed after the 1 <sup>st</sup> lecture introducing the topic Quizzes
1/14	Classes begin Introduction : meet instructor and classmates/ syllabus/ background/ discuss assignments	
1/16, 18, 21	Topic 1. General geologic overview	Alsharhan and Narin (1997) Chps 1 and 2
1/23, 25, 28, 30	Topic 2. The Arabian-Nubian Shield	Nehlig et al. (2002); Sengor & Dewey (1990); Stern et al. (2006)
2/1, 2/4, 2/6, 2/8	Topic 3. The Evolution of the Tethys	Sengor & Atayman, S. (2009); Sengor & Yilmaz (1981)
2/11	Review of Topics 1-3	
2/13	Lecture Exam 1 on Topics 1-3	
2/15, 18, 20, 22	Topic 4. Extrusion Tectonics or Tectonic Escape	Tapponnier et al. (1982); Piper et al. (2010); Dhont et al. (2006)
2/25, 27, 3/1, 3/4	Topic 5. The North Anatolian Fault, Turkey	Sengor et al. (2005)
3/6, 8	Topic 6. Earthquake Hazards in Iran	Hollingsworth et al. (2010); Allen et al. (2010); Hollingsworth et al. (2008)

3/10-3/15	<b>SPRING BREAK</b>	
3/ 18	Topic 6. Earthquake Hazards in Iran, cont.	
3/20	Review of Topics 4-6	
3/22	Lecture Exam 2 on Topics 4-6	
3/25,27, 29	Topic 7: The Complex Dynamics of Cyprus	Harrison et al. (2004); Vidal et al. (2000)
4/1, 3, 5, 8, 10, 12	Topic 8: The Red Sea and Gulf of Aden	Bosworth, et al. (2005); Beyene & Abdelsalam (2005)
4/15-end of course	Topic 9: Hydrocarbon Habitat of the Middle East	Alsharhan & Narin (1997); Beydoun (1986)
TBA	<b>FINAL EXAM</b>	<b>QUIZ 9: Oil and Gas in the M.E.</b>