GEOLOGY 4315/5315/6315: Tectonic Geomorphology
The University of Texas at El Paso
Department of Geological Sciences
Fall Semester 2016

Instructor:
Dr. José M. Hurtado, Jr.
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Geology room 301A
(915) 747-5669

Class Website:
http://www.geo.utep.edu/pub/hurtado/tectgeo
Check the web resources often for important class news and material!

Class Meetings:
Lectures/Lab: MW 11 am -12:30 pm, Geology 320
Office Hours: MW 2-4 pm in Geology 301 (or by appointment)

Text:
Required (not in bookstore; available on Amazon if you want a hardcopy, but
will be made available via PDF from the instructor – no need to purchase):


The following are not required, but are optional/recommended. Selected readings
from these will be distributed:


William B. Bull, 2009, Tectonically Active Landscapes, Wiley-Blackwell:

Edward A. Keller and Nicholas Pinter, 2002, Active Tectonics: Earthquakes,
Uplift, and Landscape (2nd edition), Prentice Hall: Upper Saddle River,

James P. McCalpin (editor), 2009, Paleoseismology (2nd edition),

Handouts and supplemental materials from a variety of other sources (e.g. recent
and classic papers on selected topics) will also be provided throughout the
semester. You will also present and discuss journal articles in class.

Your continued enrollment in this course implies your acceptance of the policies set by Dr. Hurtado!
Grading:

• **Assignments (60%)**: There will be six lab/field trip/homework assignments (see schedule). Each is worth 10%. Note that there will be 2 Saturday field trips during the semester (tentatively scheduled for Sept. 10 and Nov. 19). These trips are mandatory since they are an important component of 2 of your assignments.

• **Paper Discussion (20%)**: This is the participation component of the course. During the semester, each student will have to present a summary of a journal article and lead a discussion about it (10%). Two students will do so every week (details TBA). Every student must read the paper, so, in addition, each week every student must submit one question pertaining to the week’s readings (10%).

• **Final Exam (20%)**: Further details TBA.

• **You will be organized into teams** to work on some of the assignments. Each team must have at least one graduate student as the team leader. No team may have more than one undergraduate.

• **Graduate students will be held to a higher standard than undergraduates. Ph.D. students will be held to a higher standard than M.S. students.**

Policies:

Please contact the instructor about any concerns, schedule conflicts, missed work, etc. in advance or otherwise as soon as possible! Valid excuses include illness, absence with the instructor's prior approval, official University business, etc., but all require documentation. Otherwise, there are no make-ups for missed work, and late work will lose 50% of its value for each day it is late!

Attendance and participation are mandatory. Excessive absences may result in being dropped from the course! Do each reading assignment before attending class and come to class prepared with questions. I expect everyone to contribute to class discussions.

*If you are in the military with the potential of being called to military service and/or training during the course of the semester, you are encouraged to contact the instructor as soon as possible.*

*If you think you may have a disability or if you are experiencing learning difficulties, please contact the Disabled Student Services Office (DSSO) at (915) 747-5148. They're located in Union East room 106 or you can reach them by e-
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<table>
<thead>
<tr>
<th>Week</th>
<th>Dates (MW)</th>
<th>Lecture Topic</th>
<th>Readings and Assignments</th>
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<tbody>
<tr>
<td>Week 1</td>
<td>Aug. 22, 24</td>
<td>Introduction; Basic Concepts</td>
<td>B&amp;A Ch. 1 Molnar and England (1990); England and Molnar (1990); Hoffman and Grotzinger (1993); Whipple et al. (1999); Zeitler et al. (2001); Bishop (2007); Brocklehurst (2010)</td>
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<td>Week 2</td>
<td>Aug. 29 (no class Aug. 31)</td>
<td>Geomorphic Markers</td>
<td>B&amp;A Ch. 2 Lab 1: Photointerpretation and Process Geomorphology</td>
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<td>Week 3</td>
<td>Sept. 7, 10 (no class Sept 5)</td>
<td>Geomorphic Markers</td>
<td>Field Trip 1: Paleoseismology and Field Neotectonics Methods (Sept. 10)</td>
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<td>Week 4</td>
<td>Sept. 12, 14</td>
<td>JMH out of town – no class meetings</td>
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<td>Week 5</td>
<td>Sept. 19, 21</td>
<td>Quaternary Geochronology</td>
<td>B&amp;A Ch. 3 Gallagher et al. (1998); House et al. (1998); Farley (2002); Ehlers et al. (2003); Donelick et al. (2005); Reiners and Brandon (2006); Rahl et al. (2007); Reiners and Shuster (2009) Handouts</td>
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<td>Week 6</td>
<td>Sept. 26, 28</td>
<td>GSA – no class meetings</td>
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<td>Week 8</td>
<td>Oct. 10, 12</td>
<td>Geodesy and Short-Term Deformation</td>
<td>B&amp;A Ch. 5 Lab 3: Geodesy, Remote Sensing, and Image Processing</td>
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<td>Week 9</td>
<td>Oct. 17, 19</td>
<td>Paleoseismology</td>
<td>B&amp;A Ch. 6</td>
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<td>Week 10</td>
<td>Oct. 24, 26</td>
<td>Erosion and Uplift</td>
<td>B&amp;A Ch. 7 See week 1 readings</td>
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<td>Week 11</td>
<td>Oct. 31, Nov. 2</td>
<td>Landscape Response to Holocene Tectonics</td>
<td>B&amp;A Ch. 8 Kirby and Whipple (2001); Whipple (2004); Wobus et al. (2006); Pritchard et al. (2009); Roberts and White (2010) Lab 4: Slope-Area Analysis</td>
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<td>Week 12</td>
<td>Nov. 7, 9</td>
<td>Quaternary Geomorphic Responses to Tectonics</td>
<td>B&amp;A Ch. 9 Lave and Avouac (2000); Lave and Avouac (2001)</td>
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<td>Week 13</td>
<td>Nov. 14, 16, 19</td>
<td>Neogene Geomorphic Responses to Tectonics</td>
<td>B&amp;A Ch. 10 Keller et al. (1998); Pearce et al. (2004) Lab 5: River Terraces Field Trip 2: Paleoseismology and Field Neotectonics Methods (Nov. 19)</td>
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<td>Week 14</td>
<td>Nov. 21, 23</td>
<td>Numerical Modeling</td>
<td>B&amp;A Ch. 11 See week 3 readings Lab 6: Thermochronology</td>
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<td>Week 15</td>
<td>Nov. 28, 30</td>
<td>TBD</td>
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Final examination scheduled for Wed., Dec. 7, 1 pm-3:45 pm in Geology 320.