Required Textbook: *Structural Geology of Rocks and Regions* by Davis & Reynolds, 3rd Ed.
Class Time and Place: Monday, Wednesday, Friday 10:00 - 10:50 a.m., BH-201.
Lab Time and Place: Wednesday, 12:00 - 01:50 p.m., CS 226.
Lab Instructor: Dr. Valerio Murgulet, Email: valerio.murgulet@tamucc.edu
Office Hours: Monday to Friday 11:00 a.m. to noon or by appointment.

Course Description
Geology 4421 is an introduction to the study of structures found in the lithosphere, their description, nomenclature, and the geologic processes that form them. The course also introduces the student to numerical and graphical quantitative solution of structural problems. After a brief review of both non-tectonic and tectonic geological structures, the course will cover the basics of structural analysis (stress, strain and the relationship between the two). In the second half of the course, we will focus on the description and analysis of the chief classes of tectonic structures (faults, folds, shear zones, microstructures). The course will conclude with a look at plate tectonic processes from a structural perspective. Laboratory exercises will complement the material presented during the lectures. Prerequisites for this course are GEOL3411, MATH2413, and PHYS1401 or 2425.

Learning Objectives
Upon successful completion of this course, the student
– should have obtained a good understanding of the principles of structural analysis,
– should be familiar with the main types of geologic structures and their analysis,
– should be able to apply various laboratory techniques to solve structural problems,
– and should be able to apply the principles of structural geology within a broader context.

Major Course Requirements:

Evaluation and Grade Assignment
Your final grade will be based on a % curve from the following point distribution:
A) Exams: Mid-Term Exams (Lecture and Lab)
   Final Exam (Lecture only)
   3@100 points each: 300 points
B) Chapter Quizzes: 5 or more @10 points each: 50 points
C) Lab Assignments: 12@10 points each: 120 points
Total: 470 points

A perfect score in this course would be to earn all 470 points available. Final grading will be as follows:
A = 470-421 points  B = 420-374 points  C = 373-327 points  D = 326-280 points  F < 280 points
Exams and Chapter Quizzes
Exams can only be taken during the scheduled time, except in cases of emergencies. Documented proof is required of such emergencies. There will be NO make up exams or quizzes for unscheduled and unexcused absence! If you know you are going to miss a class or an exam and have a valid excuse, let me know BEFORE the fact, NOT after (by that time I already know…!) Make-up exams cannot be taken after the graded test has been given back to the class. There will be no exceptions!
Chapter Quizzes happen randomly and are used to encourage regular attendance in class. The odds of a Chapter Quiz occurring on a given day are inversely proportional to the number of students present in class that day. Quizzes will consist of a short series of multiple-choice or short answer questions that can be answered in approximately 5-10 minutes at the end of the class period. Chapter Quizzes may include material covered in previous lectures or in the reading assignment for that day. So please be prepared!

Laboratory Work
Lab assignments are generally due after one week (please use the outline below to help you plan ahead). Each lab will be worth 10 points. There is a “late fee” of one point per day for assignments that are not submitted in time! So please have the previous week’s lab completed before you come to the next lab!
If a laboratory is missed, you should make immediate arrangements to make up the laboratory work. Most laboratory work is difficult to reschedule due to availability of study materials. Some laboratory instruction cannot be conveniently repeated outside of the scheduled laboratory time.

Class Policies
While attendance of the lectures will not be recorded by the instructor on a regular basis, regular attendance is essential to the successful completion of this course. Treat your co-students (and instructor) with respect. The use of cell phones, mp3 players, headphones and similar electronic devices is not allowed in class.

Dropping a Class
I hope that you never find it necessary to drop this or any other class. However, events can sometimes occur that make dropping a course necessary or wise. Please consult with me before you decide to drop to be sure it is the best thing to do. Should dropping the course be the best course of action, you must initiate the process to drop the course by going to the Student Services Center and filling out a course drop form. Just stopping attendance and participation WILL NOT automatically result in your being dropped from the class. Friday, April 11 is the last day to drop a class with an automatic grade of “W” this term.

Academic Integrity/Plagiarism
University students are expected to conduct themselves in accordance with the highest standards of academic honesty. Academic misconduct for which a student is subject to penalty includes all forms of cheating, such as illicit possession of examinations or examination materials, falsification, forgery, complicity or plagiarism. (Plagiarism is the presentation of the work of another as one’s own work.) In this class, academic misconduct or complicity in an act of academic misconduct on an assignment or test will result in a failing grade.

Grade Appeals
A student who believes that he or she has not been held to appropriate academic standards as outlined in the class syllabus, equitable evaluation procedures, or appropriate grading, may appeal the final grade given in the course. The burden of proof is on the student to demonstrate
the appropriateness of the appeal. A student with a complaint about a grade is encouraged to first discuss the matter with the instructor. For complete details on the process, including the responsibilities of the parties involved in the process and the number of days allowed for completing the steps in the process, consult Texas A&M University-Corpus Christi University Procedure 13.02.99.C2.01 Student Grade Appeal Procedures (http://www.tamucc.edu/provost/university_rules/index.html), and the College of Science and Engineering Grade Appeals webpage (http://sci.tamucc.edu/students/GradeAppeal.html). For assistance and/or guidance in the grade appeal process, students may contact the chair or director of the appropriate department or school or the College of Science and Engineering Dean's Office.

Disabilities Accommodations
The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please call or visit Disability Services at (361) 825-5816 in Driftwood 101.
If you are a returning veteran and are experiencing cognitive and/or physical access issues in the classroom or on campus, please contact the Disability Services office for assistance at (361) 825-5816.

Statement of Academic Continuity
In the event of an unforeseen adverse event, such as a major hurricane and classes could not be held on the campus of Texas A&M University–Corpus Christi; this course would continue through the use of Blackboard and/or email. In addition, the syllabus and class activities may be modified to allow continuation of the course. Ideally, University facilities (i.e., emails, web sites, and Blackboard) will be operational within two days of the closing of the physical campus. However, students need to make certain that the course instructor has a primary and a secondary means of contacting each student.

Reading Assignments
All reading assignments are to be read prior to the class in which the material will be discussed. Your text is accompanied by a Study Guide, which can assist you in understanding the content of the textbook. It also provides valuable guidelines regarding general study skills, note taking, and test preparation.

Important Dates
January 22: First day of classes
March 24: Lecture Mid-Term Exam
April 02: Lab Mid-Term Exam
April 11: Last day to drop a class
May 06: Last day of classes
May 12: Final Exam (08:00 - 10:30 a.m.)
Tentative Lecture and Lab Schedule, Reading Assignments:
The following lecture schedule will be followed as closely as possible although some revisions may become necessary during the semester.

January
Wed 01/22 Lab No Lab
Fri 01/24 Primary and Secondary Structures: Ch. 1, pp. 7-29 and 706-711.
Mon 01/27 Primary and Secondary Structures: Ch. 1, pp. 7-29 and 706-711.
Wed 01/29 Fractures and Joints I: Chapter 5.
Wed 01/29 Lab Attitudes of Lines and Planes
Fri 01/31 Fractures and Joints II: Chapter 5.

February
Mon 02/03 Fractures and Joints III: Chapter 5.
Wed 02/05 Faults I: Ch. 6
Wed 02/05 Lab Outcrop Patterns and Structure Controls I
Fri 02/07 Faults II: Ch. 6
Mon 02/10 Faults III: Ch. 6
Wed 02/12 Faults IV: Ch. 6
Wed 02/12 Lab Outcrop Patterns and Structure Controls II
Fri 02/14 Dynamic Analysis – The Basics: Ch. 3, pp. 90-105.
Mon 02/17 Dynamic Analysis – The Basics: Ch. 3, pp. 90-105.
Wed 02/19 Stress I: Ch. 3
Wed 02/19 Lab Interpretation of Geologic Maps
Fri 02/21 Stress II: Ch. 3
Mon 02/24 Stress III: Ch. 3
Wed 02/26 Stress IV: Ch. 3
Wed 02/26 Lab Stereographic Projections I
Fri 02/28 Displacement and Strain I: Ch. 2

March
Mon 03/03 Displacement and Strain II: Ch. 2
Wed 03/05 Displacement and Strain III: Ch. 2
Wed 03/05 Lab Stereographic Projections II
Fri 03/07 Displacement and Strain IV: Ch. 2

03/10-03/14 SPRING BREAK
Mon 03/17 Displacement and Strain V: Ch. 2
Wed 03/19 Mechanics of Fracturing: pp. 226-239.
Wed 03/19 Lab Stereographic Projections III
Fri 03/21 Mechanics of Fracturing: pp. 226-239.

Mon 03/24 Lecture Mid-Term Exam
Wed 03/26 The Mohr Envelope: Ch. 6, pp. 286-305.
Wed 03/26 Lab Folds
Fri 03/28 Deformation Mechanisms and Microstructures I: Ch. 4
Mon 03/31 Deformation Mechanisms and Microstructures II: Ch. 4

April
Wed 04/02 Deformation Mechanisms and Microstructures III: Ch. 4
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<td>Lab</td>
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<td>Fri 04/04</td>
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<td>Mon 04/07</td>
<td>Folds I: Ch. 7</td>
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<td>Fri 04/11</td>
<td>Stereographic Analysis of Folded Rocks</td>
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<td>Mon 04/14</td>
<td>Foliations and Lineations I: Ch. 9</td>
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<td>Wed 04/16</td>
<td>Foliations and Lineations II: Ch. 9</td>
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<td>Wed 04/16</td>
<td>Foliations and Lineations II: Ch. 9</td>
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<td>Fri 04/18</td>
<td>Folds</td>
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<td>Mon 04/21</td>
<td>Geometric Analysis of Foliation and Lineation: pp. 511-520.</td>
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<td>Wed 04/23</td>
<td>Shear Zones and Sense-of-Shear Indicators I: Ch. 10</td>
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<td>Fri 04/25</td>
<td>Shear Zones and Sense-of-Shear Indicators III: Ch. 10</td>
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<td>Mon 04/28</td>
<td>The Big Picture – Structure and Active Tectonics I: Ch. 11</td>
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<td>Wed 04/30</td>
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<td>May</td>
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<td>Fri 05/02</td>
<td>Review</td>
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<td>Mon 05/05</td>
<td>Final Exam (08:00 – 10:30 a.m.)</td>
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**Drafting Supplies**

The lab exercises (and partially the lectures) will require the use of some basic drafting supplies. The following is a list of what’s needed. Please bring these items with you to each session.

- **Stereonets** (will be provided)
- **Mechanical pencil, lead size of 0.5 mm or finer (required)**
- **Colored pencils** (at least six colors, required)
- **12” ruler with mm markings** (required)
- **Protractor** (required)
- **Triangle** (optional)
- **Compass** (required)
- **Tracing paper** (one tablet, can be shared, required)
- **Graph paper** (one tablet, can be shared, required)

You will also need a calculator and, most importantly, an eraser. Get a good one!