TEXAS A&M UNIVERSITY – CORPUS CHRISTI  
COLLEGE OF SCIENCE AND ENGINEERING  

GEOLOGY 1403.001 – PHYSICAL GEOLOGY  
Department of Physical and Environmental Sciences  

SPRING SEMESTER 2015

Course Information

Course number/section: GEOL 1403.001 (lecture)  
Class meeting time: Tue/Thu, 12:30 to 01:45 p.m.  
Class location: EN 104

Course number/section: GEOL 1403.101 (lab)  
Class meeting time: Thu 05:00 to 06:50 p.m.  
Class location: CS 226

Course website: blackboard: 

Instructor Information

Instructor: Dr. Tania-Maria Anders  
Office location: CS 202  
Office Hours: Tue/Thu 2:00 to 3:00 pm, Tue 5:00 to 6:00 pm, and Wed 02:00 to 03:00 pm or by appointment. I encourage you to email me with any questions or concerns you may have (see email address listed below). 
Telephone: 825-3755  
E-mail: tania.anders@tamucc.edu

Required texts/material

Physical Geology - The Science of Earth by Charles Fletcher (2011); John Wiley & Sons. Inc.  
Or: second edition of same book

Supplies: pencil, colored pencils, ruler, protractor, calculator

Course Description

Catalog Course Description: Introduction to the origin, classification, and composition of Earth materials. Study of internal and surface processes which shape and modify Earth. Laboratory studies of minerals and rocks, as well as topographic maps, geologic maps and geologic cross-sections. This course counts toward the natural science component of the University Core Curriculum.

Extended Course Description:
Physical Geology is the branch of geology concerned with the origin, classification, and composition of Earth materials, natural geologic processes affecting and shaping our Earth (plate tectonics, earthquakes, volcanoes, global climate change etc.), as well as the forces that cause those changes. This course includes laboratory studies of minerals, rocks, as well as physiographic and geologic maps. 

**GEOL 1403 is a required course for students majoring in Geology or Environmental Science. The course may be taken by any student with the necessary interest in the natural sciences.**

**Prerequisites and Co-requisites**

none

**Student Learning Outcomes and Assessment**

Upon successful completion of this course, you should be familiar with / demonstrate knowledge of:

1. the composition and structure of the solid Earth,
2. the theory of Plate Tectonics,
3. the various rock types that make up Earth’s crust,
4. the internal and external processes that shape our planet,
5. natural hazards,
6. geologic resources (with special emphasis on energy resources),
7. global change including climate change,
8. the interaction between some of the main components of the Earth System,
9. the interdependence of science and technology and their influence on, and contribution to, modern culture.

In addition to the content knowledge this course also provides you with basic core competencies such as:

1. critical thinking, e.g. when approaching topics using the scientific method
2. problem solving by working collaboratively in teams
3. communication skills, e.g. when presenting some of your work to the group verbally or in writing
4. Empirical and quantitative skills when working with numeral data, reading graphs etc.

Please always remember that you are the one responsible for your success. I will do my best to guide you in your learning process but without YOU assuming an active role, by completing work, studying outside of class time, asking questions, making use of help offered etc. you may not successfully pass this course.

**You will have an SI (Supplemental Instructions) leader for this course. Please make use of this service! The SI leader will answer questions, explain concepts, and help you develop the important routine of adding extra study time outside of class.**

**Instructional Methods and Activities**

Geology is a very visual and hands-on discipline. I have prepared Power Point slides for you that include many graphs as well as photos depicting geologic features from around the world. Be sure to add your OWN written comments in addition to the information I provide to your notes. To deepen your understanding of the course material, as well as practice scientific writing, you will prepare three papers applying the course material to a new geologic setting (Geology of the
World Portfolio). During the laboratory studies, you will be given the opportunity to deepen your understanding of the course material with hands-on exercises.

**Major Course Requirements and Grading**

Your final grade will be based on a % curve from the following point distribution:

A) Exams (3@70 points each)  
B) Lecture Quizzes: 5@10 points each  
D) Comprehensive Final Exam  
E) Geology of the World Portfolio  
F) Labs: 12 assignments @ 10 points each and 2 exams (140 points)  

**Total:** 690 points

A perfect score in this course would be to earn all 680 points available. There will be no curve at the end of the semester! Final grading will be as follows (100-90%=A, 90-80%=B etc.):

A = 690-621 points  B = 620-552 points  C = 551-483 points  
D = 482-414 points  F <414 points

**Extra Credit**

You have three opportunities to earn extra credit points.

1. Turning in your completed score card (posted on blackboard) on the day of the final (5 points). This card will help you to keep track of your grades. Record your grades regularly!
2. Points scored on lecture quizzes beyond the 5 quizzes counting towards your grade.
3. Attending a geology related presentation offered on our campus or in the community (instructor approval required) AND submitting a half to one page summary within ONE WEEK of the talk – up to 10 points

**Course Policies**

**Attendance**

The grade you will receive for this course is based on your performance on exams, quizzes, written and laboratory assignments. Missing any of these opportunities to collect points towards your point total will affect your grade. So: **attend class!!**

**Missed Exams**

If you miss an exam (which includes anyone walking in more than 15 minutes late on the day of an exam!), you will be given the opportunity to make up this exam **only** in case of an excused absence. It is your responsibility to contact me as soon as you return to campus to provide your excuse of absence. You need to make up the missed exam within ONE WEEK of you return to campus. You loose the privilege of making up an exam if you fail to notify me in a timely manner.

**Lecture Quizzes** happen randomly and help me monitor your progress and regular attendance of the class. Quizzes will consist of a short series of multiple-choice questions to be answered in approximately 5-10 minutes usually at the beginning of the class period. Students who come to class late need to wait outside the classroom until the class has completed the quiz and may **not** make up the missed quiz at a later time. If you are absent for medical reasons or a University related event, you will be given an opportunity to make up missed quizzes at the end of the semester after the final. If you are absent for medical reasons a doctor's note is required. The University Health Center offers care for students with acute illnesses. Most services are free. FMI contact 825-2601).
Again, it is your responsibility to contact me regarding the make-up of missed quizzes and exams. Lecture quizzes will include material covered in previous lectures and from the reading assignments.

**Lab 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. **Regular attendance of the lab sessions is required** and there will be no make-up labs except for excused absences.

**Use of Electronics**
While in the classroom, please store cell phones and other electronic devices that may distract you or others from actively participating in class in your bags. Laptop computers are allowed for class-related work only. Should you disregard this rule, the entire class will lose the privilege of using laptops in class.

**Geology of the World Portfolio**
At the beginning of the semester you will be assigned a region on our planet that you will “follow” over the course of the semester. Goal of this assignment is to give you a first introduction to scientific writing and to help you deepen your understanding of the course material by applying it to a new setting. For selected topics covered in class you will write reports that will include:
- An abstract
- Key words
- Main body of text, which must include:
  - Introduction
  - Application of your newly acquired knowledge to your region
  - 3-5 figures with captions
- Reference list

More details regarding the portfolio will be given in class at the beginning of the semester. Please observe deadlines for submission of your papers. **No late work will be accepted.**

**College and University Policies**

**Academic Integrity**
It is expected that university students will demonstrate a high level of maturity, self-direction, and ability to manage their own affairs. Students are viewed as individuals who possess the qualities of worth, dignity, and the capacity for self-direction in personal behavior. 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, posting material developed by the faculty (e.g., exams) in any form including electronic, falsification, forgery, complicity, or plagiarism. (Plagiarism is the presentation of the work of another as one’s own work.) Cheating will not be tolerated and will result in a failing grade in the course and possible further disciplinary action by the university.

See Full University Policy at [http://catalog.tamucc.edu/content.php?catoid=10&navoid=313#Academic_Integrity](http://catalog.tamucc.edu/content.php?catoid=10&navoid=313#Academic_Integrity)

**Classroom/Professional Behavior/Civility**
Texas A&M University-Corpus Christi, as an academic community, requires that each individual respect the needs of others to study and learn in a peaceful atmosphere. Under Article III of the Student Code of Conduct, classroom behavior that interferes with either (a) the instructor’s ability to conduct the class or (b) the ability of other students to profit from the instructional
program may be considered a breach of the peace and is subject to disciplinary sanction outlined in article VII of the Student Code of Conduct. Students engaging in unacceptable behavior may be instructed to leave the classroom. This prohibition applies to all instructional forums, including classrooms, electronic classrooms, labs, discussion groups, field trips, etc.

Texas A&M University-Corpus Christi has a diverse student population that represents the population of the state. Our goal is to provide you with a high quality educational experience that is free from repression. You are responsible for following the rules of the University, city, state and federal government. We expect that you will behave in a manner that is dignified, respectful and courteous to all people, regardless of sex, ethnic/racial origin, religious background, sexual orientation or disability. Behaviors that infringe on the rights of another individual will not be tolerated.

Notice to Students with Disabilities and Veterans
Disability Services (DS) is the hub for coordinating services and accommodations to ensure accessibility and utilization of all programs for all Texas A&M University-Corpus Christi students with disabilities. Our services are designed to meet the unique educational needs of enrolled students with documented permanent or temporary disabilities. DS provides intake and consultation services to students seeking to register with our office. DS reviews an individual's documentation of disability and assesses eligibility for services and the determination of reasonable accommodations. For more information visit the Disability Services Office at 116 Corpus Christi Hall or go to http://disabilityservices.tamucc.edu/

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 Corpus Christi Hall 116.

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.

Academic Advising
The College of Science and Engineering requires that students meet with an Academic Advisor as soon as they are ready to declare a major. The Academic Advisor will set up a degree plan, which must be signed by the student, a faculty mentor, and the department chair. The College’s Academic Advising Center is located in Center for Instructions CI 350, and can be reached at 825-3928.

Grade Appeal Process
As stated in University Procedure 13.02.99.C2.01, Student Grade Appeal Procedures, 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 upon 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, including the responsibilities of the parties involved in the process and the number of days allowed for completing the steps in the process, see University Procedure 13.02.99.C2.01, Student Grade Appeal Procedures. These documents are accessible through the University Rules website at 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, the Office of the College of Science and Engineering Dean, or the Office of the Provost.

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.

Dropping a Course
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. April 10, 2015 is the last day to drop a class with an automatic grade of “W” this term.

Reading and Online Assignments
All reading assignments are to be read prior to the class in which the material will be discussed. Occasionally, I may be posting brief online assignment that are also meant to help you prepare for the topics to be covered in class. It is important that you come to class prepared. Lecture quizzes may contain material from the reading/online assignments. The following lecture schedule will be followed as closely as possible although some revisions may become necessary during the semester.

General Disclaimer
I reserve the right to modify the information, schedule, assignments, deadlines, and course policies in this syllabus if and when necessary. I will announce such changes in a timely manner during regular scheduled lecture periods.

Important Dates
<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
<th>Date</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>January 22</td>
<td>First class day</td>
<td>March 16-20</td>
<td>Spring Break</td>
</tr>
<tr>
<td>February 17</td>
<td>Exam 1</td>
<td>April 28</td>
<td>Exam 3</td>
</tr>
<tr>
<td>March 31</td>
<td>Exam 2</td>
<td>May 07</td>
<td>Final exam (11:00 to 01:30 pm)</td>
</tr>
</tbody>
</table>

**Lecture Schedule**

**January**
- Thu 01/22: Chapter 1: An Introduction to Geology and the “Big Ideas of Earth Sciences”
- Tue 01/27: Introduction to the Scientific Method and Scientific Writing
- Thu 01/29: Chapter 2: Solar System

**February**
- Tue 02/03: Chapter 3: Plate Tectonics
- Thu 02/05: Chapter 3 cont.
- Tue 02/10: Chapter 12: Earthquakes
- Thu 02/12: Chapter 12 cont.
- Tue 02/17: EXAM 1
- Thu 02/19: Chapter 4: Minerals
- Tue 02/24: Chapter 4 cont., The Rock Cycle, Chapter 5: Igneous Rocks
- Thu 02/26: Chapter 5 cont.

**March**
- Tue 03/03: Chapter 6: Volcanoes
- Thu 03/05: Chapter 6 cont.
- Tue 03/10: Chapter 7: Weathering
- Thu 03/12: Chapter 8: Sedimentary Rocks
- Tue 03/17: Spring Break, no classes
- Thu 03/19: Spring Break, no classes
- Tue 03/24: Chapter 8 cont.
- Thu 03/26: Chapter 9: Metamorphic Rocks
- Tue 03/31: EXAM 2

**April**
- Thu 04/02: Chapter 11: Mountain Building
- Tue 04/07: Chapter 11 cont.
- Thu 04/09: Chapter 10: Geologic Resources
- Tue 04/14: Chapter 10 cont.
- Thu 04/16: Chapter 10 cont.
- Tue 04/21: Chapter 16: Global Warming
- Thu 04/23: Chapter 16 cont.
- Tue 04/28: EXAM 3
- Thu 04/30: Chapter 17 Paleoclimatology (17. 5-10) (last day of class)

**May**
- Tue 05/05: Chapter 17 cont. (last day of class)
- Thu 05/07: Comprehensive final exam (11:00 am-01:30 pm)

**Laboratory Syllabus**

**Lab Time and Place:** 1403.101: Thu 05:00 to 06:50 p.m., CS 226
Required texts/material

Handouts and worksheets required to prepare yourself for and to work with during the lab meetings will be posted on blackboard. It is your responsibility to print out and bring this material with you to lab. **Handouts will not be provided!**

Also, please purchase a basic Rock and Mineral Identification book of your choosing.

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

- Mechanical pencil, lead size of 0.5 mm or finer
- Colored pencils (at least six colors)
- Protractor
- Eraser
- 12” ruler with mm markings
- Calculator

Lab Policies/Attire

There is **no food or drink** permitted in the geology lab (CS 226). You are required to wear **closed-toed and -heeled shoes** to the lab. You are not required to wear a lab coat.

ALL STUDENTS MUST SUCCESSFULLY PASS A LAB SAFETY COURSE FOR WHICH YOU REGISTERED SEPARATELY.

Lab Description

The laboratory exercises are intended to give you a hands-on geology experience, as well as compliment the lecture material. They will focus on three main topics: (1) plate tectonics, (2) rocks and minerals, and (3) working with topographic and geologic maps.

After the completion of these exercises, you should be able to successfully describe and identify the most common rocks and minerals found on our planet. You will also learn to recognize some of the most common rocks found in Texas. You will be given an introduction to the interpretation of topographic and geologic maps, as well as geologic cross sections.

Student Learning Outcomes and Assessment

Upon successful completion of the laboratory exercises you should be able to

1. Describe the fundamental principles of plate tectonics
2. Identify various minerals as well as basic igneous, sedimentary, and metamorphic rocks
3. Read, interpret, and construct topographic and geologic maps

Lab Requirements and Grading

Your points from the lab section will be added to the points acquired in the lecture section.

To successfully complete this geology course you MUST attend both lecture AND labs.

- Lab Performance (quiz or assignment; 10 pts. each) 120 points
- Exam 1 70 points
- Exam 2 (Take-home; 5 points deduction/day for late work) 60 points
- Total: 250 points

Grade Assignment: See Course description

Lab Policies: See above and course description
Important Dates

<table>
<thead>
<tr>
<th>Jan 22</th>
<th>Lab begin</th>
<th>April 30</th>
<th>Exam 2 due</th>
</tr>
</thead>
<tbody>
<tr>
<td>March 12</td>
<td>Exam 1</td>
<td>April 30</td>
<td>Last lab meeting</td>
</tr>
</tbody>
</table>

Lab Schedule

January

Lab 1 22  Basics: Math and Graphing; Scientific Writing; complete lab safety
Lab 2 29  Plate Tectonics

February

Lab 3 05  Minerals
Lab 4 12  Igneous Rocks
Lab 5 19  Sediments, Sedimentary Structures, and Sedimentary Rocks
Lab 6 26  Metamorphic Rocks

March

Lab 7 05  Rocks of Texas, Introduction to Geologic Maps
12  EXAM 1
19  SPRING BREAK
Lab 8 26  Topographic Maps

April

Lab 9 02  Geologic Structures and Maps 1
Lab 10 09  Geologic Structures and Maps 2
Lab 11 16  Geologic Structures and Maps 3, EXAM 2 (TAKE HOME)
Lab 12 23  Global Climate Change
30  EXAM 2 DUE, Review for lecture final

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 is needed. Please bring these items with you to each session.

- Mechanical pencil, lead size of 0.5 mm or finer
- Eraser
- Colored pencils (at least six colors)
- 12” ruler with mm markings
- Protractor (I can provide some)
- Calculator

Listservs

Listservs you may find interesting are:
geolstu-list@sci.tamucc.edu  Geology listserv
escistu-list@sci.tamucc.edu  Environmental Sciences listserv