GEOL 3310: Geochemistry  
3 credits  
Spring 2019  
MWF 9:00 am - 9:50 am  
VIN 146  

Instructor:  Dr. Elizabeth C. Koeman-Shields  
Office:  VIN 124  
Phone:  325-486-6767 (office)  
Email:  ekoemanshields@angelo.edu  

Office Hours: MW 1:00 pm – 4:00 pm and T 9:00 pm – 11:00 am, or by appointment  

Required Materials:  
- Textbook: *Geochemistry*, by William M. White  
- ASU email account that you check regularly  
- Blackboard course site  

Student Learning Outcomes:  
The student will learn and practice how to study and work together and how to carefully defend their thinking when answering questions or participating in a discussion. Learning outcomes will be evaluated by homework, in-class assignments, discussions, quizzes, and exams. At the end of this course, the student will be able to:  

1. Describe the origin of the elements we see on earth and in the solar system  
2. Calculate and predict chemical reaction behavior during a range of geological processes  
3. Identify appropriate radioactive dating methods for geological material and calculate ages  
4. Analyze and evaluate geochemical research and data related to geochemical principles  

GRADING:  
- 4 Graded in-class projects (5% each) 20%  
- Journal Article Presentation 10%  
- Journal Article Discussions 10%  
- 4 HW Assignments (5% each) 20%  
- 2 Open book/notes Exams (10% each) 20%  
- 1 Final Comprehensive Exam 10%  
- Daily Attendance 10%  
  - There will be no make-ups for daily attendance; however, you will have 3 unexcused absences dropped from your grade.  
  - Extra Credit (+0-5 pts): To be determined  

There will be no make-ups for homework, in-class projects/assignments, or quizzes. Make-up exams will be given for tests ONLY under extenuating circumstances. Prior email notification is needed for a make-up exam.
ATTENDANCE POLICY:
You are expected to attend all scheduled class meetings. Missed attendance CANNOT be made up (that is what the 3 dropped are for). Attendance will be checked at each class meeting. Please inform me well ahead of time if you will need to be absent for any reason including religious holidays. NOTE: You are NOT automatically dropped if you stop attending class. March 28th is the last day to drop a course.

CELL PHONES AND OTHER ELECTRONIC DEVICES:
You may use a laptop or tablet to take notes during class. Please do not disturb others with their use. Please keep all electronics on vibrate or silent. The use of any electronic device not authorized by the instructor during a test may result in the forfeiture of your grade for that test. All electronic devices should be turned off and stored out of sight during tests.

CLASS PREPARATION ASU EMAIL:
Since class announcements will be routinely distributed via email and Blackboard, you will need to regularly check your ASU email account and our course Blackboard site (daily). All course correspondence will be through your ASU email account and Blackboard. Please see the email policy in Bb for more details. ASU provides Internet and email services to you at any of the computer labs on campus. Call 942-2911 to set this up if necessary.

LECTURE:
A typical class meeting will combine mini-lectures, discussions, group activities, multimedia presentations, and other demonstrations and activities to give you an opportunity to learn concepts in as active a manner as possible.

STUDENTS WITH DISABILITIES:
ASU is committed to the principle that no qualified individual with a disability shall, on the basis of disability, be excluded from participation in or be denied the benefits of the services, programs or activities of the university, or be subjected to discrimination by the university, as provided by the Americans with Disabilities Act of 1990 (ADA), the Americans with Disabilities Act Amendments of 2008 (ADAAA), and subsequent legislation.

The Office of Student Affairs is the designated campus department charged with the responsibility of reviewing and authorizing requests for reasonable accommodations based on a disability, and it is the student’s responsibility to initiate such a request by contacting: Ms. Dallas A. Swafford, Director of Student Disability Services, 325-942-2047

TITLE IX:
Angelo State University is committed to the safety and security of all students. If you or someone you know experience sexual harassment, sexual assault, domestic or dating violence, stalking, or discrimination, you may contact ASU’s Title IX Coordinator: Michelle Nicole Boone, J.D., Director of Title IX Compliance, 325-486-6357, michelle.boone@angelo.edu, Mayer Administration Building 204A.
RELIGIOUS HOLY DAY:
A student who intends to observe a religious holy day should make that intention known in writing to the instructor prior to the absence. A student who is absent from classes for the observance of a religious holy day shall be allowed to take an examination or complete an assignment scheduled for that day within a reasonable time after the absence.

INCOMPLETE GRADE POLICY
It is policy that incomplete grades be reserved for student illness or personal misfortune. Please contact faculty if you have serious illness or a personal misfortune that would keep you from completing course work. Documentation may be required. See ASU Operating Policy 10.11 Grading Procedures for more information.

ACADEMIC INTEGRITY:
Students are expected to maintain complete honesty and integrity in all work. Any student found guilty of any form of dishonesty in academic work is subject of disciplinary action and possible expulsion from ASU. The College of Science and Engineering adheres to the Statement of Academic Integrity.

PLAGIARISM:
Plagiarism is a serious topic covered in ASU’s Academic Integrity policy in the Student Handbook. Plagiarism is the action or practice of taking someone else’s work, idea, etc., and passing it off as one’s own. Plagiarism is literary theft.

In your discussions and/or your papers, it is unacceptable to copy word-for-word without quotation marks and the source of the quotation. It is expected that you will summarize or paraphrase ideas giving appropriate credit to the source both in the body of your paper and the reference list.

Papers are subject to be evaluated for originality via Turnitin. Resources to help you understand this policy better are available at the ASU Writing Center.

COPYRIGHT POLICY:
Students officially enrolled in this course should make only one printed copy of the given articles and/or chapters. You are expressly prohibited from distributing or reproducing any portion of course readings in printed or electronic form without written permission from the copyright holders or publishers.

GENERAL POLICIES RELATED TO THIS COURSE:
All students are required to follow the policies and procedures presented in these documents:
1) Angelo State University Student Handbook
2) Angelo State University Catalog

GEOLOGIC EXHIBITION ORGANIZATION (GEO):
GEO, the student organization of all interested in geology (not just majors/minors), meets almost every Wednesday @ 6:00PM. GEO is a student chapter of the American Association of petroleum Geologists (AAPC). Sigma Gamma Epsilon, the national honor society of the earth sciences is
YOU CAN MAJOR OR MINOR IN GEOLOGY @ ASU!
See the BS in Geoscience requirements\(^i\). A Geology Minor requires 18 hours of geology courses. Good and rewarding careers exist for geologists, geophysicists, hydrogeologists, secondary science teachers, and petroleum engineers. Talk to your professor and read information about geoscience careers\(^x\).

FINAL NOTE:
It is my goal to make this class both interesting and informative for you. With a reasonable amount of effort, it should be possible for everyone to meet the course objectives and earn a passing grade. With additional effort, aptitude, and investment of time, students may earn even higher course grades. If at any time you run into difficulties with the material, or need assistance or clarification, please do not hesitate to ask for help. I am here for you, and I will be glad to entertain any reasonable requests.

\(^i\) http://blackboard.angelo.edu
\(^ii\) https://www.angelo.edu/content/files/14197-op-1011-grading-procedures
\(^iii\) http://www.angelo.edu/student-handbook/community-policies/academic-integrity.php
\(^iv\) http://www.angelo.edu/student-handbook/community-policies/academic-integrity.php
\(^v\) http://www.angelo.edu/dept/writing_center/academic_honesty.php
\(^vi\) http://www.angelo.edu/student-handbook/
\(^vii\) http://www.angelo.edu/catalogs/
\(^viii\) http://www.aapg.org
\(^ix\) https://www.angelo.edu/physics/geoscience_degree.php
\(^x\) http://www.angelo.edu/dept/physics/Geosciences/geoscience_careers.php
<table>
<thead>
<tr>
<th>Week</th>
<th>Lecture Topics</th>
<th>Assigned Reading</th>
<th>Exams and Homework</th>
</tr>
</thead>
<tbody>
<tr>
<td>#1: 1/14, 1/16, 1/18</td>
<td>Syllabus Periodic Table Element Properties</td>
<td>Chapter 1</td>
<td>1/18: assign HW #1</td>
</tr>
<tr>
<td>#2: 1/23, 1/25</td>
<td>Basic Principles of Chemistry</td>
<td>Chapter 1</td>
<td></td>
</tr>
<tr>
<td>#3: 1/28, 1/30, 2/1</td>
<td>Fundamentals of Thermodynamics</td>
<td>Chapter 2</td>
<td>1/28: HW #1 due</td>
</tr>
<tr>
<td>#4: 2/4, 2/6, 2/8</td>
<td>Fundamentals of Thermodynamics</td>
<td>Chapter 2</td>
<td></td>
</tr>
<tr>
<td>#5: 2/11, 2/13, 2/15</td>
<td>Thermodynamics of Multicomponent Systems</td>
<td>Chapter 3</td>
<td>2/11: assign HW#2</td>
</tr>
<tr>
<td>#6: 2/18, 2/20, 2/22</td>
<td>Thermodynamics of Multicomponent Systems Applications of Thermo.</td>
<td>Chapters 3 and 4</td>
<td>2/18: HW#2 due</td>
</tr>
<tr>
<td>#7: 2/25, 2/27, 3/1</td>
<td>Applications of Thermo.</td>
<td>Chapter 4</td>
<td></td>
</tr>
<tr>
<td>#8: 3/4, 3/6, 3/8</td>
<td>Cosmochemistry</td>
<td>Chapters 10</td>
<td>3/83: Exam #1 Chapters 1-4</td>
</tr>
<tr>
<td>3/11-3/15</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>#9: 3/18, 3/20, 3/22</td>
<td>Trace Elements in Igneous Processes</td>
<td>Chapter 7</td>
<td></td>
</tr>
<tr>
<td>#11: 4/1, 4/3, 4/5</td>
<td>Radiogenic Isotope Geochemistry</td>
<td>Chapters 8</td>
<td>4/1: HW#3 due</td>
</tr>
<tr>
<td>#12: 4/8, 4/10, 4/12</td>
<td>Stable Isotope Geochemistry</td>
<td>Chapter 9</td>
<td></td>
</tr>
<tr>
<td>#13: 4/15, 4/17, 4/19</td>
<td>Stable Isotope Geochemistry</td>
<td>Chapter 9</td>
<td>4/19: Exam #2 Chapters 7, 8, 10</td>
</tr>
<tr>
<td>#14: 4/22, 4/24, 4/26</td>
<td>Aquatic Geochemistry</td>
<td>Chapter 6</td>
<td>4/22: assign HW#4</td>
</tr>
<tr>
<td>#15: 4/29, 5/1, 5/3</td>
<td>Organic Geochemistry</td>
<td>Chapter 12</td>
<td>4/29: HW#4 due</td>
</tr>
<tr>
<td>#16: 5/8</td>
<td>Final Exam</td>
<td>Wednesday 8 – 10 am</td>
<td></td>
</tr>
</tbody>
</table>